

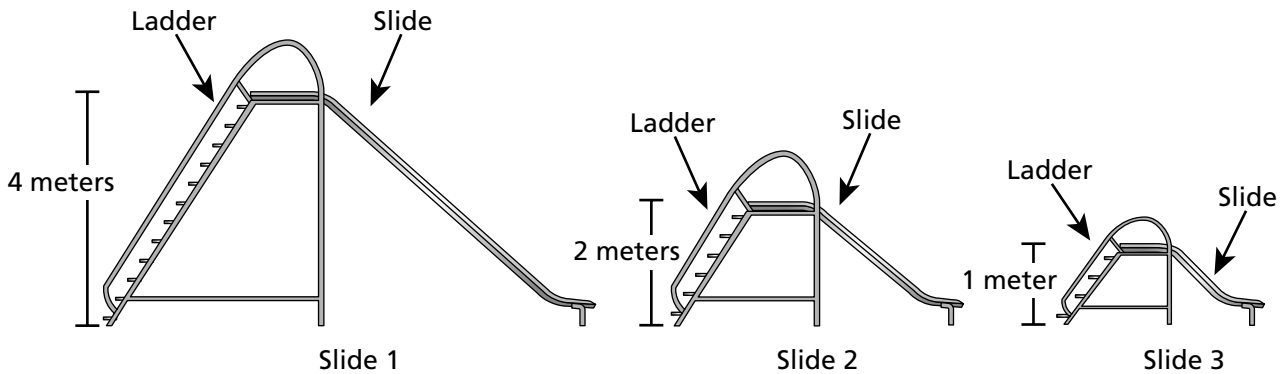
Kentucky Summative Assessments



Grade 7 Science Released Items 2026



Maria and Johnny are seventh graders visiting a local city park. They slide down three playground slides. The drawing shows these three slides.



Maria has a mass of 38 kilograms (kg), and Johnny has a mass of 45 kg. Sometimes they push themselves off gently, and sometimes they push themselves off with more force. Sometimes they start out at the top, but at other times they climb up the slide backwards, stop at some point along the slide, and then slide down.

Maria notices there seems to be a relationship between the slide they use and their speed at the bottom.

Maria said, "I'm going to go down the slow slide now."

"Which one do you mean?" asked Johnny.

"Slide 3, of course," said Maria.

SC071603_00

1

SC071603_01_3

Which one statement **best** explains why Maria referred to Slide 3 as the "slow slide"?

- A** It allows her to store the least kinetic energy.
- B** It allows her to store the most kinetic energy.
- C** It allows her to store the least potential energy.
- D** It allows her to store the most potential energy.



Released Item Performance

Kentucky Summative Assessments

Spring 2026

Grade 7

Science

Item: SC071603_01

Book Question Number: 1

Standard: 07-PS3-2

Item Type: MC

Key: C

Student Group	Number of Students	Percent Correct	Average Item Score	Item Breakout Statistics - Answer Choice Options			
				A (%)	B (%)	C (%)	D (%)
All Students	46,940	45%	0.45	29%	14%	45%	12%
Gender							
Female	22,751	41%	0.41	31%	15%	41%	13%
Male	24,189	49%	0.49	28%	13%	49%	10%
Ethnicity							
African American	5,031	37%	0.37	29%	21%	37%	14%
American Indian or Alaska Native	59	32%	0.32	36%	17%	32%	15%
Asian	1,087	51%	0.51	26%	11%	51%	12%
Hispanic or Latino	4,880	40%	0.40	26%	19%	40%	16%
Native Hawaiian or Pacific Islander	79	42%	0.42	27%	18%	42%	14%
White (non-Hispanic)	33,237	48%	0.48	30%	12%	48%	10%
Two or more races	2,567	43%	0.43	29%	15%	43%	13%
Migrant							
Migrant	230	35%	0.35	23%	26%	35%	17%
English Learner							
English Learner	2,866	35%	0.35	24%	23%	35%	19%
Economically Disadvantaged							
Economically Disadvantaged	27,785	42%	0.42	30%	16%	42%	13%
Students with Disabilities							
Students with Disabilities	6,489	38%	0.38	28%	20%	38%	14%

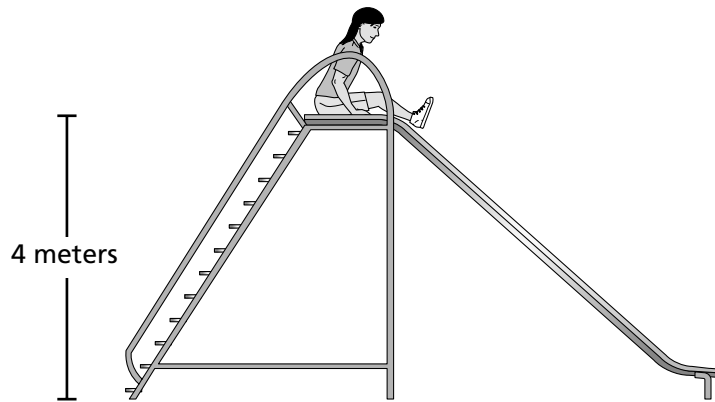


2

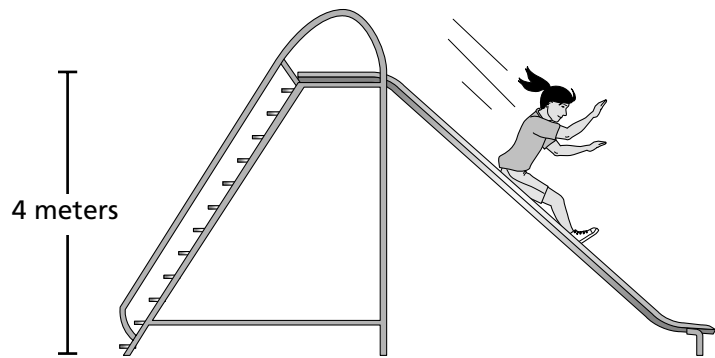
SC071603_02_2

In which one model would Maria **most likely** have the same potential energy she has while sitting at the top of Slide 2?

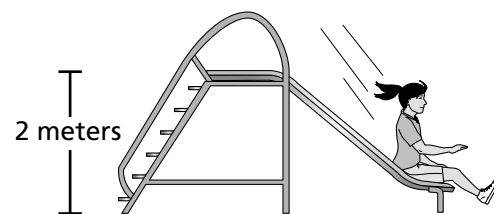
A



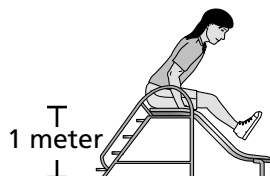
B



C



D





Released Item Performance

Kentucky Summative Assessments

Spring 2026

Grade 7

Science

Item: SC071603_02

Book Question Number: 2

Standard: 07-PS3-2

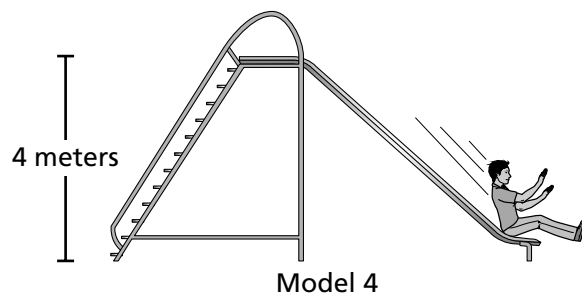
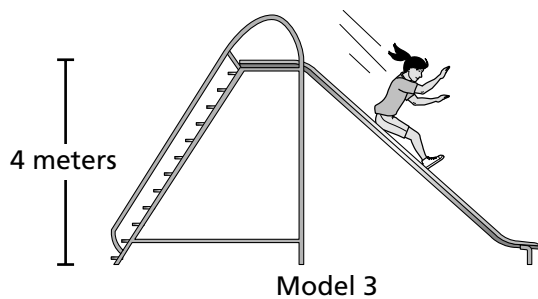
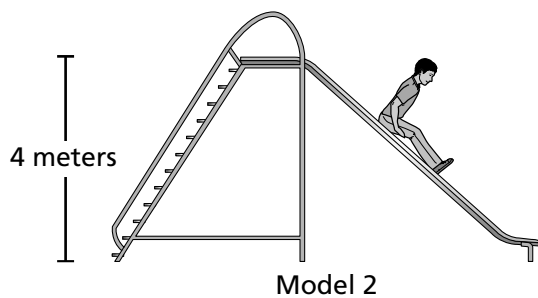
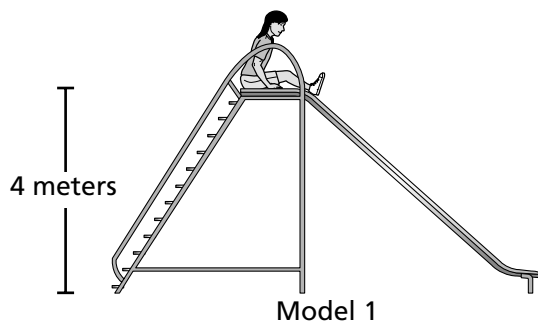
Item Type: MC

Key: B

Student Group	Number of Students	Percent Correct	Average Item Score	Item Breakout Statistics - Answer Choice Options			
				A (%)	B (%)	C (%)	D (%)
All Students	46,937	36%	0.36	22%	36%	28%	13%
Gender							
Female	22,750	33%	0.33	22%	33%	31%	14%
Male	24,187	40%	0.40	22%	40%	26%	12%
Ethnicity							
African American	5,032	32%	0.32	24%	32%	32%	12%
American Indian or Alaska Native	59	41%	0.41	25%	41%	22%	12%
Asian	1,087	42%	0.42	20%	42%	27%	11%
Hispanic or Latino	4,879	36%	0.36	20%	36%	31%	12%
Native Hawaiian or Pacific Islander	79	37%	0.37	18%	37%	37%	9%
White (non-Hispanic)	33,234	37%	0.37	22%	37%	27%	14%
Two or more races	2,567	35%	0.35	24%	35%	29%	13%
Migrant							
Migrant	230	37%	0.37	20%	37%	35%	8%
English Learner							
English Learner	2,866	38%	0.38	19%	38%	32%	11%
Economically Disadvantaged							
Economically Disadvantaged	27,781	33%	0.33	23%	33%	31%	13%
Students with Disabilities							
Students with Disabilities	6,487	34%	0.34	25%	34%	30%	12%



SC071603_00b



**3**

SC071603_03_4

In which one model does the student **most likely** have the greatest kinetic energy?

- A** Model 1
- B** Model 2
- C** Model 3
- D** Model 4



Released Item Performance

Kentucky Summative Assessments

Spring 2026

Grade 7

Science

Item: SC071603_03

Book Question Number: 3

Standard: 07-PS3-2

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	46,939	29%	0.29	14%	13%	43%	29%
Gender							
Female	22,751	23%	0.23	14%	14%	49%	23%
Male	24,188	35%	0.35	14%	13%	38%	35%
Ethnicity							
African American	5,032	26%	0.26	16%	18%	40%	26%
American Indian or Alaska Native	59	27%	0.27	25%	8%	39%	27%
Asian	1,087	31%	0.31	10%	10%	48%	31%
Hispanic or Latino	4,880	27%	0.27	15%	16%	42%	27%
Native Hawaiian or Pacific Islander	79	24%	0.24	11%	25%	39%	24%
White (non-Hispanic)	33,235	30%	0.30	13%	12%	44%	30%
Two or more races	2,567	29%	0.29	14%	15%	42%	29%
Migrant							
Migrant	230	28%	0.28	13%	19%	40%	28%
English Learner							
English Learner	2,866	26%	0.26	18%	20%	36%	26%
Economically Disadvantaged							
Economically Disadvantaged	27,784	27%	0.27	15%	15%	42%	27%
Students with Disabilities							
Students with Disabilities	6,486	28%	0.28	19%	16%	37%	28%



SC071603_00c

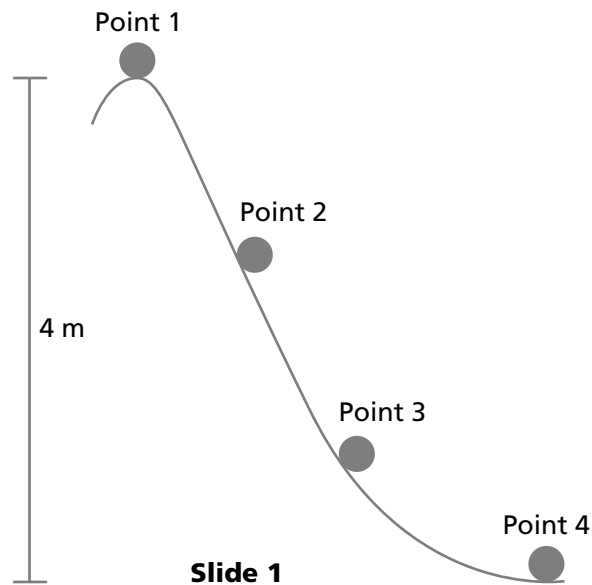
They began getting tired from all the climbing and sliding. Johnny said, “We sure have used a lot of energy here on the playground!”

Maria replied, “Yes, the slides sure are good energy-converting machines.”

“What do you mean?” asked Johnny.

“Remember what we learned in class?” Maria replied. “There are different kinds of energy, and the slide just converts one kind to another.”

The diagram shows points on the slide.



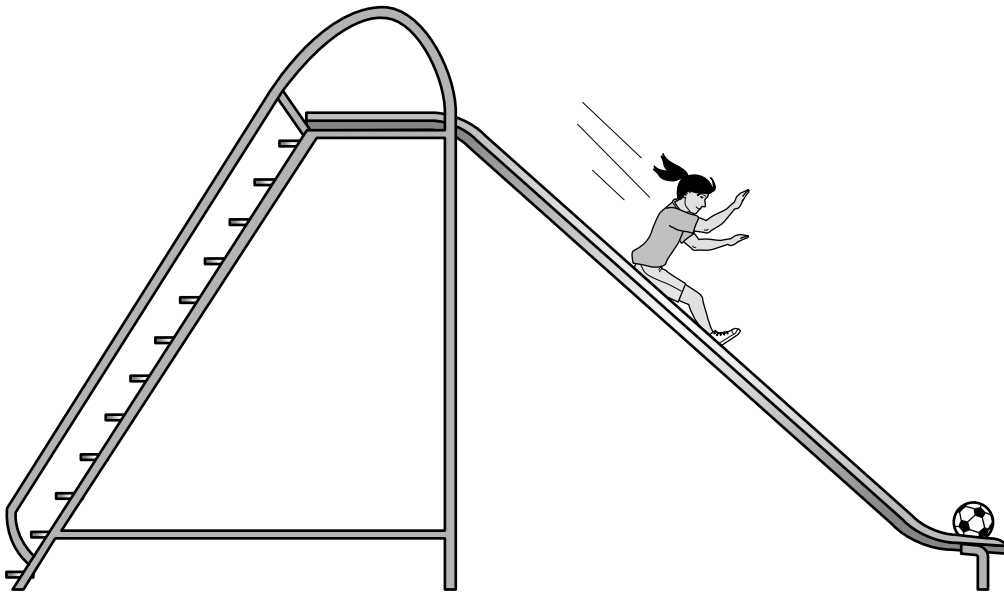


SC071603_00c2

As they discuss the results of their experimentation, Maria remembers learning about how kinetic energy can be transferred. For fun, she places her sister's soccer ball at the bottom of the slide and then slides down the slide with her legs locked so the bottom of her feet impact the ball. To her delight, the ball goes flying across the playground!

"Let me try that," said Johnny.

Johnny and Maria both try different slides to see how far they can propel the soccer ball.





4

SC071603_04_1

Based on what you know about Johnny and Maria and about the transfer of energy, which one list **best** ranks how far the ball traveled, from longest distance to shortest distance?

- A** Maria from the top of slide 1,
Johnny from the top of slide 2,
Maria from the top of slide 2
- B** Maria from the top of slide 1,
Johnny from the top of slide 1,
Johnny from the top of slide 2
- C** Johnny from the top of slide 2,
Maria from the top of slide 3,
Johnny from the top of slide 3
- D** Johnny from the top of slide 2,
Maria from the top of slide 1,
Johnny from the top of slide 3



Released Item Performance

Kentucky Summative Assessments

Spring 2026

Grade 7

Science

Item: SC071603_04

Book Question Number: 4

Standard: 07-PS3-2

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	46,934	31%	0.31	31%	32%	22%	16%
Gender							
Female	22,750	30%	0.30	30%	32%	21%	17%
Male	24,184	32%	0.32	32%	31%	22%	15%
Ethnicity							
African American	5,031	26%	0.26	26%	34%	25%	15%
American Indian or Alaska Native	59	31%	0.31	31%	31%	20%	19%
Asian	1,087	40%	0.40	40%	29%	16%	15%
Hispanic or Latino	4,879	27%	0.27	27%	32%	25%	16%
Native Hawaiian or Pacific Islander	79	29%	0.29	29%	30%	18%	23%
White (non-Hispanic)	33,232	32%	0.32	32%	31%	21%	16%
Two or more races	2,567	31%	0.31	31%	33%	22%	14%
Migrant							
Migrant	230	23%	0.23	23%	28%	33%	16%
English Learner							
English Learner	2,864	24%	0.24	24%	29%	31%	17%
Economically Disadvantaged							
Economically Disadvantaged	27,779	28%	0.28	28%	32%	24%	17%
Students with Disabilities							
Students with Disabilities	6,484	25%	0.25	25%	31%	26%	17%



SC071603_00d

Johnny and Maria really enjoyed propelling the soccer ball, but wished they could invent a way to make it go even farther. They discussed how to create a new slide with even more energy.

5

SC071603_05_4,1

How could Johnny and Maria design a new slide, Slide 4, in which the maximum potential energy is the same as in Slide 1, but the maximum kinetic energy is increased?

Select the TWO **best** answers.

- A** The heights of Slides 1 and 4 would be the same, but Slide 4 would be made of a material with less friction.
- B** Slide 4 would be shorter than Slide 1, so the slide would be closer to the force of Earth's gravitational pull.
- C** The heights of the slides would be the same, but Slide 4 would be made of a material that weighs more, to attract more gravity.
- D** The heights of the slides would be the same, but Slide 4 would drop at a steeper angle so gravity could have more of an influence.
- E** The heights of Slides 1 and 4 would be the same, but Slide 4 would be made of a material with more friction.



Released Item Performance

Kentucky Summative Assessments

Spring 2026

Grade 7

Science

Item: SC071603_05

Book Question Number: 5

Standard: 07-PS3-2

Item Type: MS

Key: A,D

Student Group	Number of Students	Percent Correct	Average Item Score	Item Breakout Statistics - Score Percentages		
				Score 0 (%)	Score 1 (%)	Score 2 (%)
All Students	46,831	64.5%	1.29	14%	43%	43%
Gender						
Female	22,703	61.8%	1.24	15%	46%	39%
Male	24,128	67.1%	1.34	13%	40%	47%
Ethnicity						
African American	5,010	54.5%	1.09	19%	52%	28%
American Indian or Alaska Native	59	60.2%	1.20	12%	56%	32%
Asian	1,087	72.5%	1.45	11%	33%	56%
Hispanic or Latino	4,862	57.5%	1.15	18%	49%	33%
Native Hawaiian or Pacific Islander	79	54.4%	1.09	23%	46%	32%
White (non-Hispanic)	33,169	67.0%	1.34	13%	41%	47%
Two or more races	2,565	62.1%	1.24	15%	46%	39%
Migrant						
Migrant	230	49.8%	1.00	25%	50%	25%
English Learner						
English Learner	2,842	46.9%	0.94	25%	57%	19%
Economically Disadvantaged						
Economically Disadvantaged	27,715	59.4%	1.19	17%	48%	36%
Students with Disabilities						
Students with Disabilities	6,458	52.3%	1.05	21%	54%	25%



SC071603_00e

Since they know they can't build a new slide, they try other ways to slide faster. Johnny sits at the top of the slide and pushes off to slide down. Next, Maria applies additional force and helps Johnny push off the top of the slide.

6

SC071603_06_:

Extended Response Directions: Read the question carefully. Then enter your response in the space provided.

Part A

Does the strength of Maria's push affect Johnny's potential energy at any point while he is on the slide? Explain the reason for your answer.

Part B

Does her push affect his kinetic energy at any point? Explain the reason for your answer.



Released Item Performance

Kentucky Summative Assessments

Spring 2026

Grade 7

Science

Item: SC071603_06

Book Question Number: 6

Standard: 07-PS3-2

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	43,851	31.1%	1.25	20%	53%	12%	8%	5%
Gender								
Female	21,645	31.4%	1.26	19%	56%	12%	8%	6%
Male	22,206	30.9%	1.24	22%	52%	13%	9%	5%
Ethnicity								
African American	4,478	21.6%	0.86	33%	54%	8%	4%	2%
American Indian or Alaska Native	54	27.8%	1.11	22%	57%	13%	2%	6%
Asian	1,064	38.2%	1.53	14%	51%	14%	11%	10%
Hispanic or Latino	4,442	23.9%	0.96	29%	55%	9%	4%	3%
Native Hawaiian or Pacific Islander	78	24.7%	0.99	28%	56%	8%	4%	4%
White (non-Hispanic)	31,364	33.4%	1.34	17%	53%	14%	9%	6%
Two or more races	2,371	29.4%	1.18	22%	54%	12%	8%	4%
Migrant								
Migrant	203	18.0%	0.72	41%	52%	4%	1%	2%
English Learner								
English Learner	2,454	14.3%	0.57	49%	46%	4%	1%	0%
Economically Disadvantaged								
Economically Disadvantaged	25,464	26.8%	1.07	25%	55%	11%	6%	3%
Students with Disabilities								
Students with Disabilities	5,510	17.9%	0.71	42%	48%	6%	2%	1%

Rubric

Kentucky Academic Standards Science Rubric	
Score	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

yes, because if Johnny did not get pushed he would not have the same speed as when he got pushed by maria. Johnny would have a greater potential energy if he got pushed because he would have less friction against the slide.

Part B

no, Maria push does not affect Johnny's slide because he would still have no potential energy if pushed and or not being pushed.

Anchor Annotation, Paper 1

Score Point 0

There is no evidence that the student has an understanding of how Maria's push affects Johnny's potential energy and his kinetic energy. The answer to the question and explanation in Part A are incorrect since the push will not affect potential energy. The answer to the question in Part B is incorrect with an explanation that contains no information about kinetic energy and incorrect information about potential energy.

Part A

When Maria pushes Johnny his potential energy increses because more force is applied to him. When more force is applied to him his speed increases.

Part B

When Maria pushes Johnny his kinetic energy decreces because more force is applied to him. When she pushes him it take all the kinetic energy and turns it into potential energy.

Anchor Annotation, Paper 2**Score Point 0**

There is no evidence that the student has an understanding of how Maria's push affects Johnny's potential energy and his kinetic energy. The information in both Part A and Part B is incorrect and indicates a complete lack of understanding about both potential energy and kinetic energy. The small portion of the explanation in Part A regarding the application of force increasing speed is not enough to indicate any additional understanding of the concepts of potential energy or kinetic energy.

Part A

yes, force is getting added to the person and it will make him go faster.

Part B

no, the kinetic energy stays the same

Anchor Annotation, Paper 3**Score Point 0**

There is no evidence that the student has an understanding of how Maria's push affects Johnny's potential energy and his kinetic energy. The question is answered incorrectly in Part A, and although the response contains information that applying force increases speed, this is not relevant to the question. The question is answered incorrectly in Part B (*no, the kinetic energy stays the same*). Holistically, the response reflects no synthesis and understanding of the complex ideas related to the question.

Part A

If she push Johnny he will go faster then if he push himself think of it kind of like a swing the more you push the higher it goes but in the case the harder you push the faster you can go down the slide \

Part B

It will it will give him more kinetic energy when he is on the slide if he were to push himself it would have less kinetic energy

Anchor Annotation, Paper 4**Score Point 1**

There is evidence in this response that the student has minimal understanding of how Maria's push affects Johnny's potential energy and his kinetic energy. In Part A, the explanation lacks any information to indicate understanding of potential energy. The answer to the question in Part B is correct and the brief explanation indicates a minimal understanding of a change in energy resulting from the push (*It will give him more kinetic energy*). Holistically, the correct information in Part B demonstrates minimal understanding overall.

Part A

no, cause since potential energy is energy not used. Johnys potential energy wont be effected cause he didn't use any.

Part B

no, cause he didnt do anything that required energy

Anchor Annotation, Paper 5**Score Point 1**

There is evidence in this response that the student has minimal understanding of how Maria's push affects Johnny's potential energy and his kinetic energy. The answer to the question in Part A is correct and the explanation indicates minimal understanding of the concept of potential energy (*no, cause since potential energy is energy not used, Johnys potential energy wont be effected*). The answer to the question in Part B is incorrect and the explanation is not clear.

Part A

A. Maria's push does affect Johnny's potential energy. When Maria pushes him energy is transferred to him which he can not get rid of. So when he is done sliding he has even more potential energy.

Part B

Maria's push does affect Johnny's kinetic energy. The push add's kinetic energy which pushes Johnny faster.

Anchor Annotation, Paper 6**Score Point 1**

There is evidence in this response that the student has minimal understanding of how Maria's push affects Johnny's potential energy and his kinetic energy. The answer to the question in Part A is incorrect and although the explanation recognizes Maria's push transfers energy to Johnny, that energy is not potential energy, so the idea that Johnny will have more potential energy when he is finished sliding is incorrect. The answer to the question in Part B is correct and the explanation does recognize the idea of a transfer of kinetic energy (*Maria's push does affect Johnny's kinetic energy. The push add's kinetic energy which pus[h]es Johnny faster*). Holistically, due to the demonstration of some minimal understanding of the transfer of kinetic energy, this response is a score point 1.

Part A

Maria's push does affect Johnny's potential energy, because the push would give him speed going down, and potential energy is height so the height of Johnny would decrease as he goes down the slide.

Part B

Maria's push does affect the kinetic energy of Johnny because kinetic energy is speed, and mass. Johnny's speed would increase if Maria pushed him, so he would gain kinetic energy.

Anchor Annotation, Paper 7**Score Point 2**

There is evidence in this response that the student has limited understanding of how Maria's push affects Johnny's potential energy and his kinetic energy. The answer to the question in Part A is incorrect and although a relationship of potential energy to height is mentioned, reflecting some understanding of potential energy, the whole of the explanation indicates a major misconception. The question is answered correctly in Part B and the explanation indicates limited understanding of the underlying scientific principle (*Maria's push does affect the kinetic energy of Johnny because kinetic energy is speed and mass. Johnny's speed would increase if Maria pushed him, so he would gain kinetic energy*). The additional information describing what kinetic energy is adds some clarity to the response. Compare to the minimal explanation for Part B in Anchor Paper 6. Holistically, this response reflects limited synthesis and understanding.

Part A

No, Maria's push does not affect Johnny's potential energy because potential energy is when you're still.

Part B

Yes, her push affects Johnny's kinetic energy, because so is making gravity pull quicker and making him go faster.

Anchor Annotation, Paper 8**Score Point 2**

There is evidence in this response that the student has limited understanding of how Maria's push affects Johnny's potential energy and his kinetic energy. The question is answered correctly in Part A, and the explanation indicates limited understanding of potential energy (*No, Maria's push does not affect Johnny's potential energy because potential energy is when you're still*). The answer to the question in Part B is correct and the explanation supports the answer (*Yes, her push affects Johnny's kinetic energy, because so is making gravity pull quicker and making him go faster*), although the portion focused on gravity is significantly flawed. Taken holistically, the response lacks some coherence but is partially complete, and the question is answered using limited understanding and knowledge.

Part A

no, because he can't store the energy

Part B

yes, it will give Johnney more force making him go faster down the slide.

Anchor Annotation, Paper 9**Score Point 2**

There is evidence in this response that the student has limited understanding of how Maria's push affects Johnny's potential energy and his kinetic energy. The question is answered correctly in Part A and the explanation is correct (*no, because he can't store the energy*). The question is also answered correctly in Part B and the explanation is also correct (*yes, it will give Johnney more force making him go faster down the slide*). Holistically, the response reflects limited synthesis and understanding.

Part A

No, Maria's push does not affect Johnny's potential energy at any point while he is on the slide. This is because her pushing him isn't potential, it's kinetic energy.

Part B

Yes, Maria's push does affect Johnny's kinetic energy at a point while he is on the slide. He is getting kinetic energy from Maria's force which is kinetic energy.

Anchor Annotation, Paper 10**Score Point 3**

There is evidence in this response that the student has a general understanding of how Maria's push affects Johnny's potential energy and his kinetic energy. The question is answered correctly in Part A (*No*) and the explanation supports this answer (*This is because her pushing him isn't potential, it's kinetic energy*). The question is answered correctly in Part B (*Yes*) and the explanation supports this answer (*He is getting kinetic energy from Maria's force which is kinetic energy*). The student's explanations of the two parts are connected. Holistically, the response is generally coherent, correct and reflects general synthesis and understanding.

Part A

Maria's push doesn't effect Johnny's potential energy. If she pushes him lightly, then Johnny won't go down as fast. If Maria pushes him with full force, that means Johnny will go down the slide with MORE Kinetic energy, not potential energy. If Maria was pushing him then that means he won't be sitting at the top of the slide, that means he will be sliding down the slide.

Part B

However, Maria's push does effect his kinetic energy. If Johnny pushed himself down the slide he would be going at a normal rate. If Maria pushed him lightly, Johnny will go down the slide, slightly faster, causing a somewhat change in its kinetic energy. If Maria pushed him with all her force, then Johnny will go down much faster, causing a major change in Johnny's kinetic energy.

Anchor Annotation, Paper 11
Score Point 3

There is evidence in this response that the student has a general understanding of how Maria's push affects Johnny's potential energy and his kinetic energy. The answer to the question in Part A is correct (*Maria's push doesn't effect Johnny's potential energy*), and the explanation supports this answer (*If Maria pushes him with full force, that means Johnny will go down the slide with MORE Kinetic energy, not potential energy ... he won't be sitting at the top of the slide*). The question is answered correctly in Part B (*Maria's Push does effect his kinetic energy*), and the answer is supported in the explanation (*If Maria pushed him lightly, Johnny will go down the slide, slightly faster, causing a somewhat change in its kinetic energy. If Maria pushed him with all her force, then Johnny will go down much faster, causing a major change in Johnny's kinetic energy*). Although the explanations lack some clarity in terms of what potential energy is and the idea of a transfer of kinetic energy, holistically the information is sufficient to reflect general synthesis and understanding.

Part A

The strength of Maria's push doesn't affect Johnny's potential energy. The reason why it doesn't affect his potential energy is because it's not making Johnny go any higher on the slide. Therefore Maria's push is giving Johnny straight kinetic energy. But, it does affect Johnny's GPe (gravitational potential energy) the reason for that is because it's making Johnny go down the slide faster.

Part B

Maria's push does affect his kinetic energy not his potential energy because the strength of Maria's push is kinetic energy so she is transferring kinetic energy into his back so he can go down faster on the slide.

Anchor Annotation, Paper 12**Score Point 3**

There is evidence in this response that the student has a general understanding of how Maria's push affects Johnny's potential energy and his kinetic energy. The question is answered correctly in Part A (*The strength of Maria's push doesn't affect Johnny's potential energy*). The explanation indicates some understanding of potential energy (*The reason why it doesn't affect his potential energy is because it's not making Johnny go any higher on the slide. Therefore Maria's push is giving Johnny straight kinetic energy*) but is hindered by some contradictory information that detracts regarding gravitational potential energy. The question is answered correctly in Part B (*Maria's push does affect his kinetic energy not his potential energy*), and the explanation supports this answer (*the strength of Maria's push is kinetic energy so she is transferring kinetic energy into his back so he can go down faster*). Holistically, the response reflects general synthesis and understanding with some contradictory information.

Part A

Maria's push does not affect Johnny's potential energy. Potential energy is having the potential to do something/create energy. Even if Maria is their or if she's not Johnny is still going to have the same amount of potential energy. In conculison, no Maria's push will not affect Johnny's potential energy.

Part B

Maria's push is going to affect Johnny's kinetic energy. This is because Maria is giving Johnny a little boost. Transferring some of her energy to him. Thus, making Johnny have more energy causing him to go faster. In conculison, yes Maria's push will affect Johnny's kinetic energy.

Anchor Annotation, Paper 13**Score Point 4**

There is evidence in this response that the student has a complete and thorough understanding of how Maria's push affects Johnny's potential energy and his kinetic energy. The answer to the question in Part A is correct and the explanation is thorough, correct and completely coherent (*Maria's push does not affect Johnny's potential energy. Potential energy is having the potential to do something ... Even if Maria is their or if she's not Johnny is still going to have the same amount of potential energy*). The answer to the question in Part B is also correct and the explanation is thorough, correct and completely coherent (*Maria's push is going to affect Johnny's kinetic energy. This is because Maria is giving Johnny a little boost. Transferring some of her energy to him. Thus, making Johnny have more energy causing him to go faster*). The error in Part A (*create energy*) is considered a minor when taken with the whole response, and overall the response reflects complete synthesis and understanding.

Part A

The strength of Johnny's potential energy is not affected by Maria's push. Potential energy is the energy stored when not in motion. When Maria pushes Johnny he is already moving by the time her hands release. When Johnny's sitting at the top of the slide he has the same potential energy as he always did. Because of this Maria is not affecting Johnny's potential energy at any point of the slide ride.

Part B

The strength of Maria's push does affect Johnny's kinetic energy. By pushing him he goes faster. By going faster it increases kinetic energy. The more force Maria gives off the higher speed Johnny gets. If he were to slide down regularly then the kinetic energy wouldn't be as high as when he is pushed.

Anchor Annotation, Paper 14
Score Point 4

There is evidence in this response that the student has a complete and thorough understanding of how Maria's push affects Johnny's potential energy and his kinetic energy. The answer to the question in Part A is correct and the explanation is complete, thorough and correct (*The strength of Johnny's potential energy is not affected by Maria's push. Potential energy is the energy stored . . . When Maria pushes Johnny he is already moving by the time her hands release*). The answer to the question in Part B is also correct and the explanation is complete, thorough and correct (*The strength of Maria's push does affect Johnny's kinetic energy. By pushing him he goes faster . . . increases kinetic energy . . . If he were to slide down regularly then the kinetic energy wouldn't be as high as when he is pushed*). Holistically, the response is completely coherent and reflects complete synthesis and understanding of the complex ideas associated with the question.

Part A

The strength of Maria's push doesn't affect Johnny's potential energy on the slide because the potential energy of an object/person is determined by its mass/weight and how close to the center of gravity it is (height from ground), not by another force being applied to it.

For example, if a rock is pushed by a force, its mass and height (at that point) still stays the same. Therefore, because PE is determined by these two factors, the rock's PE does not change. This is the same for Johnny on top of his slide.

Part B

Meanwhile, Maria's push does affect Johnny's kinetic energy, as it allows for the speed at which he is going to quicken (m/s), and because KE is determined by one's mass and movement speed, Maria's push allowing him to go faster affects Johnny's KE on the slide.

Kinetic energy is measured by an equation using the factors of an object's mass and speed (or drop, etc.), to represent the energy of movement. Because Maria helps Johnny off from the top of the slide by applying force that helps him to go faster, she affects his KE.

Anchor Annotation, Paper 15**Score Point 4**

There is evidence in this response that the student has a complete and thorough understanding of how Maria's push affects Johnny's potential energy and his kinetic energy. The answer to the question in Part A is correct (*The strength of Maria's push doesn't affect Johnny's potential energy on the slide*) and the explanation demonstrates a strong use of a scientific principle in support of the explanation [*the potential energy of an object/person is determined by its mass/weight and how close to the center of gravity it is (height from ground), not by another force being applied to it; if a rock is pushed by a force, its mass and height (at that point) still stays the same. Therefore, because PE is determined by these two factors, the rock's PE does not change*]. The answer to the question in Part B is also correct (*Maria's push does affect Johnny's kinetic energy*) and the explanation is complete, thorough and based on appropriate knowledge and skills [*it allows for the speed at which he is going to quicken (m/s), and because KE is determined by one's mass and movement speed, Maria's push allowing him to go faster affects Johnny's KE on the slide ... Because Maria helps Johnny off from the top of the slide by applying force that helps him to go faster, she affects his KE ... energy of movement*]. Holistically, the response is completely coherent and reflects complete synthesis and understanding of the complex ideas associated with the question.



SC071603_00f

Johnny and Maria continue playing on the slides and begin experimenting to determine the influence of their starting points.

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SC071603_07_3

Which one of these **most likely** happens to the total energy as Johnny moves from Point 2 to Point 3 on the slide?

- A** It increases as Johnny's kinetic energy is converted to potential energy.
- B** It decreases as Johnny's kinetic energy is converted to potential energy.
- C** It stays the same as Johnny's potential energy is converted to kinetic energy.
- D** It increases at first and then decreases as Johnny's kinetic energy is converted to potential energy.



Released Item Performance

Kentucky Summative Assessments

Spring 2026

Grade 7

Science

Item: SC071603_07

Book Question Number: 7

Standard: 07-PS3-2

Item Type: MC

Key: C

Student Group	Number of Students	Percent Correct	Average Item Score	Item Breakout Statistics - Answer Choice Options			
				A (%)	B (%)	C (%)	D (%)
All Students	46,928	30%	0.30	17%	18%	30%	34%
Gender							
Female	22,746	25%	0.25	18%	19%	25%	38%
Male	24,182	34%	0.34	17%	18%	34%	31%
Ethnicity							
African American	5,030	24%	0.24	22%	22%	24%	32%
American Indian or Alaska Native	59	27%	0.27	24%	12%	27%	37%
Asian	1,087	32%	0.32	14%	15%	32%	39%
Hispanic or Latino	4,879	24%	0.24	20%	19%	24%	37%
Native Hawaiian or Pacific Islander	79	29%	0.29	19%	20%	29%	32%
White (non-Hispanic)	33,227	32%	0.32	16%	18%	32%	34%
Two or more races	2,567	27%	0.27	19%	20%	27%	35%
Migrant							
Migrant	230	21%	0.21	19%	24%	21%	36%
English Learner							
English Learner	2,864	21%	0.21	21%	22%	21%	35%
Economically Disadvantaged							
Economically Disadvantaged	27,775	27%	0.27	19%	20%	27%	34%
Students with Disabilities							
Students with Disabilities	6,484	26%	0.26	21%	23%	26%	29%



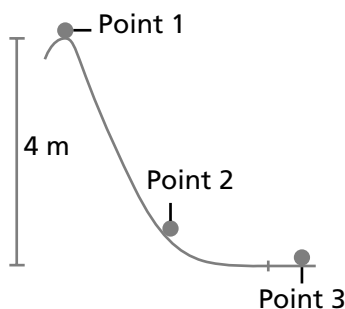
SC071603_00g

As they are leaving the playground Johnny says, “I sure have learned a lot about energy today. I never knew the playground could be so educational. I can’t wait to tell my mom that I learned something while she thought I was just playing!”

8

SC071603_08_1

At Point 1, Johnny is sitting still at the top of the slide. At Point 2, he is moving quickly near the bottom of the slide. At Point 3, he is sitting still at the bottom. Which one option correctly gives the relationship between potential energy (PE) and kinetic energy (KE) on the playground slide?



Option	Point 1	Point 2	Point 3
A	High PE and zero KE	Low PE and higher KE	Low PE and zero KE
B	Low PE and zero KE	Low PE and higher KE	High PE and zero KE
C	Low PE and higher KE	High PE and zero KE	Low PE and zero KE
D	High PE and zero KE	Low PE and zero KE	Low PE and higher KE

- A A
- B B
- C C
- D D



Released Item Performance

Kentucky Summative Assessments

Spring 2026

Grade 7

Science

Item: SC071603_08

Book Question Number: 8

Standard: 07-PS3-2

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	46,932	51%	0.51	51%	22%	18%	9%
Gender							
Female	22,747	48%	0.48	48%	22%	20%	10%
Male	24,185	55%	0.55	55%	21%	17%	8%
Ethnicity							
African American	5,031	39%	0.39	39%	28%	23%	10%
American Indian or Alaska Native	59	39%	0.39	39%	25%	31%	5%
Asian	1,087	64%	0.64	64%	15%	13%	8%
Hispanic or Latino	4,881	42%	0.42	42%	25%	22%	10%
Native Hawaiian or Pacific Islander	79	44%	0.44	44%	18%	29%	9%
White (non-Hispanic)	33,229	54%	0.54	54%	20%	17%	8%
Two or more races	2,566	49%	0.49	49%	23%	20%	8%
Migrant							
Migrant	230	29%	0.29	29%	30%	32%	9%
English Learner							
English Learner	2,866	31%	0.31	31%	31%	27%	11%
Economically Disadvantaged							
Economically Disadvantaged	27,777	45%	0.45	45%	24%	21%	10%
Students with Disabilities							
Students with Disabilities	6,484	36%	0.36	36%	28%	25%	11%



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