



Indiana Superintendent of Public Instruction

ISTEP+: Grade 4

Science

Released Part 1 Applied Skills (open-ended) Items and Scoring Notes

Introduction

The *ISTEP*+ Spring 2016 test was administered to Indiana students in Grades 3-8 and 10. The test included two parts: Part 1 was given in March, and Part 2 took place in late April and early May. Part 1 contained Applied Skills test questions (also referred to as open-ended items) that were hand scored by trained evaluators, and Part 2 was machine scored. Scores for Part 1 and Part 2 are combined to generate a student's total score.

Test results, as well as images of the Applied Skills student responses, are available online, and schools are expected to discuss results with parents and students. As a springboard for these conversations and to serve as a resource for teachers, the Indiana Department of Education has created this document, which consists of the following:

- a brief description of the types of questions on the test
- a short summary of scoring rules utilized by the trained evaluators
- a copy of the rubrics—or scoring guides—used by evaluators to score student responses
- a copy of the released Applied Skills questions ("released" means the items are posted on the web and are no longer secure; therefore, the released test items can be discussed and used with students as future practice items)
- anchor papers—or sample student responses—used by evaluators to distinguish between score points

Notes:

- The Part 1 open-ended questions are released when test results are made available.
- It is important to keep in mind that the majority of a student's score is calculated from items in Part 2. Since Part 2 items are secure and are not released, they are not included in this document.

Question Types

This document addresses questions from *ISTEP+ Part 1. Students* demonstrate their knowledge and understanding by responding to items that are open-ended, providing written responses in a short-answer or essay-type format.

Part 1 consists of the following test question types: Constructed-Response (CR), Extended-Response (ER), and a Writing Prompt (WP). Item types vary by subject area. Math, Science, and Social Studies include CR and ER items. English/Language Arts includes CR and WP test questions.

Scoring

The questions on *ISTEP*+ Part 1 are scored by evaluators who must have a four-year college degree and pass a series of qualifying tests. Prior to scoring student responses, evaluators receive extensive training to ensure that student responses are scored accurately and consistently.

For Part 1 of *ISTEP*+, each question is scored according to a rubric, or scoring guide. Rubrics clearly define the requirements for each score point. A set of student responses representing all of the score points on a rubric are selected as anchor papers (exemplars) and are used as clear examples of specific score points. Samples of anchor papers are presented within this document.

| ISTEP+ Part 1: Science | | | |
|---------------------------|--|-----------------------------------|--|
| Question Type | Score Reporting Categories | Scoring Method | |
| Constructed-Response (CR) | Physical Science Earth Science Life Science Science, Engineering and Technology The Nature of Science The Design Process | 2-pt. CR Rubric (Grades 4 & 6) | |
| Extended Response (ER) | Physical Science Earth Science Life Science Science, Engineering and Technology The Nature of Science The Design Process | 4-pt. ER Rubric (Grades 4 & 6) | |

If a student's response is unable to be scored, it is assigned one of the following condition codes:

- A Blank/No Response/Refusal
- **B** Illegible
- C Written predominantly in a language other than English
- D Insufficient response/Copied from text
- E Response not related to test questions or scoring rule (not applied to Mathematics questions)

More information is available regarding assessment topics on the Office of Student Assessment homepage at http://www.doe.in.gov/assessment.

Item #1 Constructed-Response

Constructed-Response Standard 2: Earth Science

Question 1

| 1. | Landslides can occur in the | mountains after heavy rain from a storm. |
|------------------------|--|---|
| | What happens during a land | slide? |
| | | |
| | | |
| | | |
| | Why are landslides a concer mountain? | n for farmers living at the bottom of a |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| Key | y Element(s): | |
| Any | . , | amounts of earth (soil, dirt, rocks, etc.) move |
| Any quic | ny response indicating that large suickly down the mountain. ny response indicating that the cu | amounts of earth (soil, dirt, rocks, etc.) move errent farmland could be covered up by the dirt from type and/or loss of farming equipment under the |
| Any quic | ny response indicating that large suickly down the mountain. ny response indicating that the cue mountain and/or change of soil | rrent farmland could be covered up by the dirt from |
| Any quic | ny response indicating that large suickly down the mountain. ny response indicating that the cue mountain and/or change of soil ndslide. | rrent farmland could be covered up by the dirt from |
| Any quice Any the land | ny response indicating that large suickly down the mountain. ny response indicating that the cue mountain and/or change of soil ndslide. bric: Two key elements | rrent farmland could be covered up by the dirt from |

Question 1, Sample A - Score Point 2

| Landslides ca | an occur | in the m | ountains | after he | eavy ra | in from | a storm. |
|--|-----------|----------|----------|----------|---------|---------|----------|
| What happer | ns during | a landsl | ide? | | | | |
| Trees, mad | , roc | rs, and | olan to | fall | don | na | hillor |
| moan | tains | | <u>'</u> | | | | |
| | | | | | | | |
| Why are land mountain? | | | | | | | |
| The | tuff | that | £11 | - 1 | own | can | hartthe |
| animils | | Hone | thin | 5. | | Camp | , , |
| VIII 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 0100 | CHY | 1.1115 | | | | |

Scoring Notes: Part one of the response correctly describes what occurs during a landslide. Part two of the response correctly describes a concern for farmers living at the bottom of a mountain. This response receives two points for two correct key elements.

Question 2, Sample B – Score Point 2

Landslides can occur in the mountains after heavy rain from a storm. What happens during a landslide?

When a landstide occurs the rock from the mountain

Why are landslides a concern for farmers living at the bottom of a mountain?

end of the mountain because it could ruin thin som

Scoring Notes: Part one of the response correctly describes what occurs during a landslide. Part two of the response correctly describes a concern for farmers living at the bottom of a mountain. This response receives two points for two correct key elements.

Question 1, Sample C - Score Point 1

Landslides can occur in the mountains after heavy rain from a storm.

What happens during a landslide?

There is a storm with heavey Rain

Why are landslides a concern for farmers living at the bottom of a mountain?

Off the moutain and can damage the form.

Scoring Notes: Part one of the response describes what may cause a landslide but incorrectly describes what happens during a landslide. Part two of the response correctly describes a concern for farmers living at the bottom of a mountain. This response receives one point for one correct key element.

Question 1 Sample D - Score Point 1

| Landslides ca | an occur in the mo | untains after heavy | rain from | m a storm. |
|--|---------------------|----------------------|-----------|------------|
| What happer | s during a landslid | | | |
| Cocks | Slide | down | a | Mountain |
| | - | | (| |
| | | | | |
| The state of the s | slides a concern fo | or farmers living at | the botto | om of a |
| mountain? | | metim | 00 | 1-9 |
| pech | (N) F, 50 | rr CI TVI | () | D/ |
| 60 u/ | yers c | ome don | M | |

Scoring Notes: Part one of the response correctly describes what occurs during a landslide. Part two of the response does not identify a concern for farmers living at the bottom of a mountain. This response receives one point for one correct key element.

Question 1, Sample E - Score Point 0

| What happe | ens during a lar | ndslide? | . 1 | | |
|-------------|------------------|-----------------|-----------|----------|---------|
| T + | fain | really | haid | , | |
| _ | • | • | | | |
| | | | | | |
| | | | | | |
| Why are lar | ndslides a conc | ern for farmers | living at | the bott | om of a |
| mountain? | ndslides a conc | | -76 | | |
| nountain? | ndslides a conc | | -76 | | |

Scoring Notes: Part one of the response describes a possible cause of a landslide but does not describe what happens during a landslide. Part two of the response does not identify a concern for farmers living at the bottom of a mountain. This response receives zero points for zero correct key elements.

Question 1, Sample F - Score Point 0

Landslides can occur in the mountains after heavy rain from a storm.

What happens during a landslide?

Heavy rain storms come in.

Why are landslides a concern for farmers living at the bottom of a mountain?

because you have to watch out for a rain storm.

Scoring Notes: Part one of the response describes a possible cause of a landslide but does not describe what happens during a landslide. Part two of the response does not identify a concern for farmers living at the bottom of a mountain. This response receives zero points for zero correct key elements.

Item #2 Constructed-Response

Constructed-Response Standard 1: Physical Science

Question 2

| 2. | Heat can move from one place to another in many different ways. |
|-------|--|
| | Explain how heat moves when a person warms his hands by holding them near a fire without touching the fire. |
| | |
| | Explain how heat moves from hot chocolate in a cup to warm a person's hands as the person holds on to the bottom of the cup. |
| | |
| Kev I | Element(s): |
| Any | response indicating that the student's hands are not touching the fire so heat res radiate/move through the air form the fire to the person's hands, warming |
| - | response indicating that heat is transferred directly/by touch from the hot colate to the mug and then to the person's hands. |
| | |
| Rubr | ric: |
| 2 poi | |

Question 2, Sample A - Score Point 2

Heat can move from one place to another in many different ways.

Explain how heat moves when a person warms his hands by holding them near a fire without touching the fire.

the heat is in the our amound the fire so you can just put your hands in the warm air.

Explain how heat moves from hot chocolate in a cup to warm a person's hands as the person holds on to the bottom of the cup.

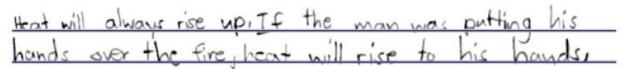
the cup and if your touching the cup it warms your hands.

Scoring Notes: Part one of the response correctly explains how the heat from a fire warms a person's hands without touching the fire. Part two of the response correctly explains how hot chocolate in a cup can warm a person's hands as the person holds the bottom of the cup. This response receives two points for two correct key elements.

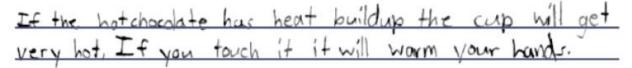
Question 2, Sample B – Score Point 2

Heat can move from one place to another in many different ways.

Explain how heat moves when a person warms his hands by holding them near a fire without touching the fire.



Explain how heat moves from hot chocolate in a cup to warm a person's hands as the person holds on to the bottom of the cup.



Scoring Notes: Part one of the response correctly explains how the heat from a fire warms a person's hands without touching the fire. Part two of the response correctly explains how hot chocolate in a cup can warm a person's hands as the person holds the bottom of the cup. This response receives two points for two correct key elements.

Question 2, Sample C - Score Point 1

Heat can move from one place to another in many different ways.

Explain how heat moves when a person warms his hands by holding them near a fire without touching the fire.

The heat from the fire makes the person's hands worm.

Explain how heat moves from hot chocolate in a cup to warm a person's hands as the person holds on to the bottom of the cup.

the heat travels from the not chadete to the cup to the hands.

Scoring Notes: Part one of the response does not explain how the heat from a fire warms a person's hands without touching the fire. Part two of the response correctly explains how hot chocolate in a cup can warm a person's hands as the person holds the bottom of the cup. This response receives one point for one correct key element.

Question 2, Sample D - Score Point 1

Heat can move from one place to another in many different ways.

Explain how heat moves when a person warms his hands by holding them near a fire without touching the fire.

Heat warms up your hands without touching by heating the air around you.

Explain how heat moves from hot chocolate in a cup to warm a person's hands as the person holds on to the bottom of the cup.

The heat warms up the cup so when you touch it its going to be not.

Scoring Notes: Part one of the response correctly explains how the heat from a fire warms a person's hands without touching the fire. Part two of the response does not explain how hot chocolate in a cup can warm a person's hands as the person holds the bottom of the cup. This response receives one point for one correct key element.

Question 2, Sample E - Score Point 0

| Heat can m | nove from | one pla | ce to anoth | er in ma | ny differ | rent w | ays. |
|--------------|-------------|----------|--|-------------|-----------|---------|------------|
| Explain how | | | The second secon | | nis hand | ls by h | olding |
| them near | a fire with | out tou | ching the fi | re. | | | 11 |
| The the | heat | ì5 | Close | enou | ah | to | read |
| the | perso | n. | | U | | | |
| | | | | | | | |
| Explain how | w heat mo | ves fron | n hot choco | olate in a | cup to | warm | a person's |
| hands as the | he person | holds or | n to the bo | ttom of the | he cup. | | |
| Worm | heat | Will | rush | to | the | ho | and. |
| | | | | | | | 1.00 |
| | | | | | | | |

Scoring Notes: Part one of the response does not explain how the heat from a fire warms a person's hands without touching the fire. Part two of the response does not explain how hot chocolate in a cup can warm a person's hands as the person holds the bottom of the cup. This response receives zero points for zero correct key elements.

Question 2, Sample F - Score Point 0

Heat can move from one place to another in many different ways.

Explain how heat moves when a person warms his hands by holding them near a fire without touching the fire.

It travels he heat getting closer and closer until it reaches the persons pains and worms their hands

Explain how heat moves from hot chocolate in a cup to warm a person's hands as the person holds on to the bottom of the cup.

It warms a persons had because the heat can thave threw the bottom of the cup and warm the hads

Scoring Notes: Part one of the response does not explain how the heat from a fire warms a person's hands without touching the fire. Part two of the response does not explain how hot chocolate in a cup can warm a person's hands as the person holds the bottom of the cup. This response receives zero points for zero correct key elements.

Item #3 Constructed-Response

Constructed-Response Standard 4: Science, Engineering, and Technology

Question 3

| 3. | A teacher would like to have the classroom door open to let in fresh air. She asks Henry to open the door, but it will not stay open without the help of a simple machine. |
|----------------------------|--|
| | What simple machine would BEST perform the task? |
| | Explain why your answer is the BEST simple machine to use. Explain how it works. |
| | |
| | |
| Key E | Element(s): |
| Any | response indicating a wedge or similar |
| | response that discusses the shape of the wedge and how it functions, largely ause of the friction generated between the wedge and the floor (or other surface) |
| Rubri | ic: |
| 2 poii 1 poii 0 poii | nt One key element |

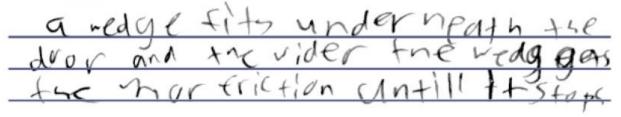
Question 3, Sample A – Score Point 2

A teacher would like to have the classroom door open to let in fresh air. She asks Henry to open the door, but it will not stay open without the help of a simple machine.

What simple machine would BEST perform the task?

avedge

Explain why your answer is the BEST simple machine to use. Explain how it works.



Scoring Notes: Part one of the response correctly identifies a wedge. Part two of the response correctly explains how the wedge slides under the door causing friction. This response receives two points for two correct key elements.

Question 3, Sample B – Score Point 2

A teacher would like to have the classroom door open to let in fresh air. She asks Henry to open the door, but it will not stay open without the help of a simple machine.

What simple machine would BEST perform the task?

A wedge.

Explain why your answer is the BEST simple machine to use. Explain how it works.

the simple machine that is best is a wedge because it can Stop the boor by getting stock oner is.

Scoring Notes: Part one of the response correctly identifies a wedge. Part two of the response correctly explains how the wedge slides under the door causing friction. This response receives two points for two correct key elements.

Question 3, Sample C - Score Point 1

A teacher would like to have the classroom door open to let in fresh air. She asks Henry to open the door, but it will not stay open without the help of a simple machine.

What simple machine would BEST perform the task?

Englaine la constant de BEST ainsels constant

Explain why your answer is the BEST simple machine to use. Explain how it works.

decause the wedge will keep the

Scoring Notes: Part one of the response correctly identifies a wedge. Part two of the response does not explain how or why a wedge works to keep the door open. This response receives one point for one correct key element.

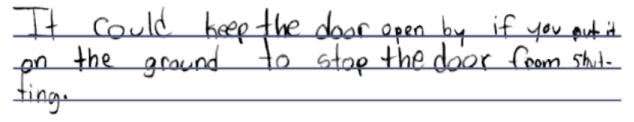
Question 3, Sample D - Score Point 1

A teacher would like to have the classroom door open to let in fresh air. She asks Henry to open the door, but it will not stay open without the help of a simple machine.

What simple machine would BEST perform the task?

A wege could keep the open like advorstopes

Explain why your answer is the BEST simple machine to use. Explain how it works.



Scoring Notes: Part one of the response correctly identifies a wedge. Part two of the response does not explain how or why a wedge works to keep the door open. This response receives one point for one correct key element.

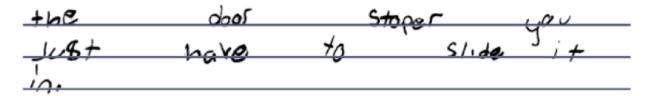
Question 3, Sample E – Score Point 0

A teacher would like to have the classroom door open to let in fresh air. She asks Henry to open the door, but it will not stay open without the help of a simple machine.

What simple machine would BEST perform the task?



Explain why your answer is the BEST simple machine to use. Explain how it works.



Scoring Notes: Part one of the response does not identify a simple machine. Part two of the response does not explain how or why a door stopper (or appropriate simple machine) works to keep the door open. This response receives zero points for zero correct key elements.

Question 3, Sample F - Score Point 0

A teacher would like to have the classroom door open to let in fresh air. She asks Henry to open the door, but it will not stay open without the help of a simple machine.

What simple machine would BEST perform the task?

A pulley

Explain why your answer is the BEST simple machine to use. Explain how it works.

If you put a String on the door you grab the String you poll it the door will open.

Scoring Notes: Part one of the response does not identify a valid simple machine for the scenario. Part two of the response does not adequately explain how or why the simple machine works to keep the door open. This response receives zero points for zero correct key elements.

Item #4 Extended-Response

Extended-Response Standard 5: The Nature of Science

Question 4

4. Theo likes to blow across the tops of bottles to hear the sounds they make. He did an investigation to find out if the amount of liquid in a bottle affects the pitch of the sound that is produced when he blows across the top of the bottle. He used the two glass bottles and two plastic bottles shown below for his investigation.









Glass Bottle W

Glass Bottle X

Plastic Bottle Y

Plastic Bottle Z

The steps Theo followed during his investigation are listed below.

- 1. Pour 100 milliliters (mL) of water into bottle W.
- 2. Pour 200 mL of water into bottle X.
- 3. Pour 300 mL of water into bottle Y.
- 4. Pour 400 mL of water into bottle Z.
- 5. Blow across the top of each bottle.
- 6. Record a description of the pitch of the sound produced when blowing across each bottle.
- 7. Create a table to show the results of the investigation.

Theo recorded his results in the table below.

Pitches Produced by Different Amounts of Water

| Bottle | Amount of Water (mL) | Pitch |
|--------|----------------------|-----------|
| W | 100 | low |
| Х | 200 | medium |
| Υ | 300 | high |
| Z | 400 | very high |

| of | water poured into each bottle. |
|----|--|
| _ | |
| | escribe ONE way Theo could improve his investigation to make the tes ore fair. |
| _ | |
| | escribe ONE conclusion that could be made about how the amount of ater in the bottle relates to the pitch of the sound produced. |
| _ | |
| | neo has another bottle just like bottle W. He will put 50 mL of water in and blow across the top. |
| | escribe how the pitch produced by the bottle with 50 mL of water in it impare with the pitch produced by bottle W. |
| | |
| | se data from the table to EXPLAIN how you know your description of the toth produced by the bottle with 50 mL of water is correct. |
| _ | |
| | |

Key Element(s):

Any one of the following:

- Graduated cylinder
- Measuring cup
- Beaker
- Any other valid scientific tool that could be used to measure volume

Any one of the following:

- Use bottles that are the same size
- Use bottles that are the same shape
- Use bottles made out of the same material
- · Any other valid way to make the investigation more fair

Any one of the following:

- The pitch gets higher as the amount of water increases.
- The pitch gets lower as the amount of water decreases.
- Any response indicating that the pitch would be lower than the pitch of Bottle W.
- Since there would be less water in the bottle than in Bottle W, the pitch should be lower than that of Bottle W.

Rubric:

4 points
3 points
 Three key elements
2 points
 Two key elements
 One key element

0 points Other

Question 1, Sample A – Score Point 4

Identify the scientific tool Theo MOST LIKELY used to measure the amount of water poured into each bottle.

the could have used a measuring cup.

Describe ONE way Theo could improve his investigation to make the test more fair.

He could use the same size bottles.

Describe ONE conclusion that could be made about how the amount of water in the bottle relates to the pitch of the sound produced.

The more liquid you put in, the higher the sound.

Theo has another bottle just like bottle W. He will put 50 mL of water in it and blow across the top.

Describe how the pitch produced by the bottle with 50 mL of water in it will compare with the pitch produced by bottle W.

It will sound glot deeper or lower than bothers

Use data from the table to EXPLAIN how you know your description of the pitch produced by the bottle with 50 mL of water is correct.

I know because the less liquid in it the lower the tone is-

Scoring Notes: Part one of the response correctly identifies a valid scientific tool. Part two of the response describes a valid way to improve the investigation. Part three of the response describes a valid conclusion about how the amount of water affects pitch. Part four of the response correctly describes the pitch of a bottle with 50 mL of water and provides a valid explanation as to why the pitch will be lower. This response receives four points for four correct key elements.

Question 4, Sample B - Score Point 4

Identify the scientific tool Theo MOST LIKELY used to measure the amount of water poured into each bottle.

graduated cylinder

Describe ONE way Theo could improve his investigation to make the test more fair.

He could put the same amout of water in the bottles

Describe ONE conclusion that could be made about how the amount of water in the bottle relates to the pitch of the sound produced.

The more water... the higher pitch.

Theo has another bottle just like bottle W. He will put 50 mL of water in it and blow across the top.

Describe how the pitch produced by the bottle with 50 mL of water in it will compare with the pitch produced by bottle W.

the pitch will be lower

Use data from the table to EXPLAIN how you know your description of the pitch produced by the bottle with 50 mL of water is correct.

made the pitch higher.

Scoring Notes: Part one of the response correctly identifies a valid scientific tool. Part two of the response describes a valid way to improve the investigation. Part three of the response describes a valid conclusion about how the amount of water affects pitch. Part four of the response correctly describes the pitch of a bottle with 50 mL of water and provides a valid explanation as to why the pitch will be lower. This response receives four points for four correct key elements.

Question 4, Sample C - Score Point 3

Identify the scientific tool Theo MOST LIKELY used to measure the amount of water poured into each bottle.

100 ml each and then added more.

Describe ONE way Theo could improve his investigation to make the test more fair.

same size bottles

Describe ONE conclusion that could be made about how the amount of water in the bottle relates to the pitch of the sound produced.

The more water the higher the pitch.

Theo has another bottle just like bottle W. He will put 50 mL of water in it and blow across the top.

Describe how the pitch produced by the bottle with 50 mL of water in it will compare with the pitch produced by bottle W.

It will be lower than bottle W.

Use data from the table to EXPLAIN how you know your description of the pitch produced by the bottle with 50 mL of water is correct.

of 100 mL would be 50 mL so 50 mL would be lower.

Scoring Notes: Part one of the response fails to identify a valid scientific tool. Part two of the response describes a valid way to improve the investigation. Part three of the response describes a valid conclusion about how the amount of water affects pitch. Part four of the response correctly describes the pitch of a bottle with 50 mL of water and provides a valid explanation as to why the pitch will be lower. This response receives three points for three correct key elements.

Question 4, Sample D – Score Point 3

Identify the scientific tool Theo MOST LIKELY used to measure the amount of water poured into each bottle.

millitiations stick

Describe ONE way Theo could improve his investigation to make the test more fair.

Have each bottle the stone bottle and have the same amount of water in it.

Describe ONE conclusion that could be made about how the amount of water in the bottle relates to the pitch of the sound produced.

The more water in the bottle the more higher it gets.

Theo has another bottle just like bottle W. He will put 50 mL of water in it and blow across the top.

Describe how the pitch produced by the bottle with 50 mL of water in it will compare with the pitch produced by bottle W.

The sound whould be lower way lower than glass bottle W.

Use data from the table to EXPLAIN how you know your description of the pitch produced by the bottle with 50 mL of water is correct.

Because Glass bottle W is low and only has loom to of water so it would be lower.

Scoring Notes: Part one of the response fails to identify a valid scientific tool. Part two of the response describes a valid way to improve the investigation. Part three of the response describes a valid conclusion about how the amount of water affects pitch. Part four of the response correctly describes the pitch of a bottle with 50 mL of water and provides a valid explanation as to why the pitch will be lower. This response receives three points for three correct key elements.

Question 4, Sample E - Score Point 2

Identify the scientific tool Theo MOST LIKELY used to measure the amount of water poured into each bottle.

A cup

Describe ONE way Theo could improve his investigation to make the test more fair.

make the bottles the same

Size

Describe ONE conclusion that could be made about how the amount of water in the bottle relates to the pitch of the sound produced.

There is more water in some bottles

Theo has another bottle just like bottle W. He will put 50 mL of water in it and blow across the top.

Describe how the pitch produced by the bottle with 50 mL of water in it will compare with the pitch produced by bottle W.

If will sound lower

Use data from the table to EXPLAIN how you know your description of the pitch produced by the bottle with 50 mL of water is correct.

It says theo Put 100ml of water and it said it was low so if you put 50ml of water it would be lower

Scoring Notes: Part one of the response fails to identify a valid scientific tool ("cup" is too vague). Part two of the response describes a valid way to improve the investigation. Part three of the response fails to identify a valid conclusion about how the amount of water affects pitch. Part four of the response correctly describes the pitch of a bottle with 50 mL of water and provides a valid explanation as to why the pitch will be lower. This response receives two points for two correct key elements.

Question 4, Sample F - Score Point 2

Identify the scientific tool Theo MOST LIKELY used to measure the amount of water poured into each bottle.

We probably used a measuring cup with inthe on it.

Describe ONE way Theo could improve his investigation to make the test more fair.

We could put the same amount of ml in the Dottles.

Describe ONE conclusion that could be made about how the amount of water in the bottle relates to the pitch of the sound produced.

The more water he pute in the more sound it is going to make.

Theo has another bottle just like bottle W. He will put 50 mL of water in it and blow across the top.

Describe how the pitch produced by the bottle with 50 mL of water in it will compare with the pitch produced by bottle W.

The putch sound would be very low.

Use data from the table to EXPLAIN how you know your description of the pitch produced by the bottle with 50 mL of water is correct.

I know because it said the bottle is the same as bottle Ward bottle W he pat in 100 ml and if he just part 50 ml in the bottle it is going to be low.

Scoring Notes: Part one of the response identifies a valid scientific tool. Part two of the response describes a valid way to improve the investigation. Part three of the response fails to identify a valid conclusion about how the amount of water affects pitch. Part four of the response correctly describes the pitch of a bottle with 50 mL of water but provides an invalid explanation as to why the pitch will be lower than the 100 mL bottle. This response receives two points for two correct key elements.

Question 4, Sample G - Score Point 1

Identify the scientific tool Theo MOST LIKELY used to measure the amount of water poured into each bottle.

milliliters is what has used

Describe ONE way Theo could improve his investigation to make the test more fair.

measureing the water.

Describe ONE conclusion that could be made about how the amount of water in the bottle relates to the pitch of the sound produced.

They heep going higher like

Theo has another bottle just like bottle W. He will put 50 mL of water in it and blow across the top.

Describe how the pitch produced by the bottle with 50 mL of water in it will compare with the pitch produced by bottle W.

Maybe row tot - VPI 1 - 1000.

Use data from the table to EXPLAIN how you know your description of the pitch produced by the bottle with 50 mL of water is correct.

on W they have the pitch
low and the amount of water

vas one hundred so if they

Put Sikty it would someway

nore. So I say very low.

Scoring Notes: Part one of the response fails to identify a valid scientific tool. Part two of the response fails to describe a valid way to improve the investigation. Part three of the response fails to identify a valid conclusion about how the amount of water affects pitch. Part four of the response correctly describes the pitch of a bottle with 50 mL of water and provides a valid explanation as to why the pitch will be lower. This response receives one point for one correct key element.

Question 5, Sample H - Score Point 1

Identify the scientific tool Theo MOST LIKELY used to measure the amount of water poured into each bottle.

He most likely used milliliters.

Describe ONE way Theo could improve his investigation to make the test more fair.

the could use the same amount of water into

Describe ONE conclusion that could be made about how the amount of water in the bottle relates to the pitch of the sound produced.

If you were to shake a glass bottle with mater it would make a low and medien bitch lik a quitar.

Theo has another bottle just like bottle W. He will put 50 mL of water in it and blow across the top.

Describe how the pitch produced by the bottle with 50 mL of water in it will compare with the pitch produced by bottle W.

It would make a very low pitch.

Use data from the table to EXPLAIN how you know your description of the pitch produced by the bottle with 50 mL of water is correct.

I know it is right because 50 is half of 100 so I tried to divided by two so I got my answer that way.

Scoring Notes: Part one of the response fails to identify a valid scientific tool. Part two of the response describes a valid way to improve the investigation. Part three of the response fails to identify a valid conclusion about how the amount of water affects pitch. Part four of the response correctly describes the pitch of a bottle with 50 mL of water but provides an invalid explanation as to why the pitch will be lower. This response receives one point for one correct key element.

Question 4, Sample I - Score Point 0

Scoring Notes: Part one of the response fails to identify a valid scientific tool. Part two of the response fails to describe a valid way to improve the investigation. Part three of the response fails to identify a valid conclusion about how the amount of water affects pitch. Part four of the response correctly describes the pitch of a bottle with 50 mL of water but provides an invalid explanation as to why the pitch will be lower. This response receives zero points for zero correct key elements.

Question 4, Sample J – Score Point 0

Identify the scientific tool Theo MOST LIKELY used to measure the amount of water poured into each bottle.

milliliters is what has used

Describe ONE way Theo could improve his investigation to make the test more fair.

measureing the water.

Describe ONE conclusion that could be made about how the amount of water in the bottle relates to the pitch of the sound produced.

They heep going higher like 10W, medium, high, and very high.

Theo has another bottle just like bottle W. He will put 50 mL of water in it and blow across the top.

Describe how the pitch produced by the bottle with 50 mL of water in it will compare with the pitch produced by bottle W.

Maybe rejon of VPIH How.

Use data from the table to EXPLAIN how you know your description of the pitch produced by the bottle with 50 mL of water is correct.

on W they have the oitch
low and the amount of water

vas one hundred so if they

Put Sifty it would sodown

nore. So I say very low.

Scoring Notes: Part one of the response fails to identify a valid scientific tool. Part two of the response fails to describe a valid way to improve the investigation. Part three of the response fails to identify a valid conclusion about how the amount of water affects pitch. Part four of the response correctly describes the pitch of a bottle with 50 mL of water but provides an invalid explanation as to why the pitch will be lower. This response receives zero points for zero correct key elements.