New England Common Assessment Program

Released Items Support Materials 2013

Grade 4 Science

Grade 4 Science Released Item Information

Item Number	Big Idea[1]	Assessment Target	Depth of Knowledge Code	Item Type [2]	Answer Key	Total Possible Points
1	SAE	PS 2-4	1	MC	A	1
2	SAE	PS 2-5	2	MC	A	1
3	SAE	PS 3-7	2	MC	A	1
4	INQ	PS 1-1	2	CR		4
5	INQ	ESS 1-2	2	MC	D	1
6	SAE	ESS 1-4	2	MC	C	1
7	POC	ESS 1-5	2	MC	D	1
8	SAE	LS 1-2	1	MC	D	1
9	SAE	LS 3-7	2	MC	B	1
10	POC	LS 4-9	2	MC	C	1

Grade 4 Science Released Inquiry Task Information

Item Number	Big Idea[1]	Inquiry Construct	Depth of Knowledge Code	Item Type [2]	Total Possible Points
1	INQ	8	2	CR	3
2	INQ	8	2	CR	3
3	INQ	10	2	SA	2
4	INQ	9	2	SA	2
5	INQ	12	3	SA	2
6	INQ	13	3	SA	2
7	INQ	13	2	SA	2
8	INQ	12	2	SA	2

[1]Big Idea: NOS = Nature of Science, SAE = Systems and Energy, MAS = Models and Scale, POC = Patterns of Change, FAF = Form and Function, INQ = Scientific Inquiry

[2]Item Type: MC = Multiple Choice, CR = Constructed Response, SA = Short Answer

PS2 (K-4) SAE-4	Students will, given a specific example or illustration (e.g., simple closed circuit, rubbing hands together), predict the observable effects of energy (i.e., light bulb lights, a bell rings, hands warm up) (e.g., a test item might ask, 'what will happen when…?').

1. A student turns on a lightbulb for 20 minutes and then turns it off. Which statement describes the lightbulb soon after it is turned off?

   A. The lightbulb is warm.
   B. The lightbulb continues to give off light.
   C. The lightbulb gives off an electrical shock.
   D. The lightbulb flickers on and off until it burns out.

PS2 (K-4) SAE-5	Students will use observations of light in relation to other objects/substances to describe the properties of light (can be reflected, refracted, or absorbed).

2. Why do people in hot climates often wear white clothing instead of black clothing?

   A. White clothing reflects more sunlight than black clothing and helps the people keep cool.
   B. Black clothing reflects more sunlight than white clothing and helps the people keep warm.
   C. White clothing absorbs less sunlight than black clothing and helps the people keep warm.
   D. Black clothing absorbs less sunlight than white clothing and helps the people keep cool.

PS3 (K-4) SAE-7	Students will use data to predict how a change in force (greater/less) might affect the position, direction of motion, or speed of an object (e.g., ramps and balls).

3 Kelly and Jane are being pushed on swings. The girls weigh the same, but Kelly swings much higher than Jane.

How are the girls being pushed?

A. Kelly is being pushed harder than Jane.

B. Kelly is being pushed more gently than Jane.

C. Kelly and Jane are being pushed equally.

D. Kelly is being pushed in a different direction than Jane.

PS1 (K-4) INQ-1	Students will collect and organize data about physical properties in order to classify objects or draw conclusions about objects and their characteristic properties (e.g., temperature, color, size, shape, weight, texture, flexibility).

4 The table below lists physical characteristics of three objects.

Physical Characteristics of Three Objects

Object	Bending	Attracted to Magnet	Catches on Fire Easily
1	Bends	No	No
2	Bends	No	Yes
3	Bends	Yes	No

a. The objects in the table are a metal paper clip, a piece of paper, and a rubber eraser.

- Tell which object is the metal paper clip.
- Tell which object is the piece of paper.
- Tell which object is the rubber eraser.

Use data in the table to explain your answers.

b. Sort the metal paper clip, piece of paper, and rubber eraser into two groups using a physical characteristic **not** listed in the table. Explain why you sorted the objects this way.

Scoring Guide

Score	Description
4	The response demonstrates a thorough understanding of using data to draw conclusions about objects and their characteristic properties. The response correctly identifies three objects and uses data in the table to explain the answers in detail. The response also sorts the three objects using a physical characteristic not listed in the table and explains in detail why the objects were sorted this way.
3	The response demonstrates a general understanding of using data to draw conclusions about objects and their characteristic properties. The overall response is general.
2	The response demonstrates a limited understanding of using data to draw conclusions about objects and their characteristic properties. The overall response is limited.
1	The response demonstrates a minimal understanding of using data to draw conclusions about objects and their characteristic properties. The overall response is minimal.
0	The response is incorrect or irrelevant to the skill or concept being measured.
Blank	No response

Training Notes:

Part a: A thorough response can be exemplified by the following sample response:

Object 1 is a rubber eraser, because an eraser bends but is not attracted to a magnet and does not easily catch on fire. Object 2 is a piece of paper, because a piece of paper bends and easily catches on fire but is not attracted to a magnet. Object 3 is a metal paper clip, because a paper clip bends and is attracted to a magnet but does not easily catch on fire or because it is the only object attracted to the magnet.

Part b: A thorough response can be exemplified by **one** of the following sample responses:

- Piece of paper and paper clip in one group. Eraser in another group. I can push my fingernail into the eraser but I can't push my fingernail into the paper or paper clip.
- Piece of paper and paper clip in one group. Eraser in another group. An eraser crumbles when you rub it on something but the paper and paper clip do not.
- Eraser and piece of paper in one group. Paper clip in another group. A metal paper clip feels cold when you touch it and an eraser and piece of paper do not.
- Eraser and paper clip in one group. Piece of paper in another group. I can rip a piece of paper but I can't rip an eraser or paper clip.
- Eraser and paper clip in one group. Piece of paper in another group. Paper is a large thin sheet but an eraser and paper clip are a lot smaller.

Score Point 4

4

a). • I think #3 is the metal paper clip because it attracts to magnet and it doesn't catch on fire easily.
• I think #2 is the paper because it doesn't attract to magnets and it catches on fire easily.
• I think #1 is the rubber eraser because it doesn't attract to magnets it doesn't catch on fire easily.

b). I sorted by reflecting and not reflecting. The paper clip reflects a little bit and the paper and eraser don't. I sorted the objects this way because some objects reflect and some don't.

In part a, the three objects (paper clip, paper and rubber eraser) are correctly identified based on the characteristics in the table. In part b, the items are logically sorted into two groups. One group contains the object that reflects (the paper clip) and the other group contains the two objects that do not reflect (the paper and rubber eraser).

Score Point 3

❹ The metal paper clip is object three.
The paper is object two.
The rubber eraser is object one.

	usefull	Made from trees
paper	yes	yes
paper clip	yes	no
erase	yes	no

The three objects are correctly identified in part a. However, the response does not include data from the table that supports these identifications. In part b, two groupings were attempted. The “usefulness” of the objects does not lend itself to sorting into two distinct groups. Separating them according to whether or not they are made from trees is a logical sorting, with only the paper being made from trees while the paper clip and eraser are not.

Score Point 2

4

Number one is the rubber eraser because it can bend they are not atracted to magnets and it dosn't catch on fire easily. Number two is the paper because it can bend it is not atracted to magnets and it dose catch on fire easily. Number three is the paper clip because it can bend it is atracted to magnets and dosen't catch on fire esily

1 eraser
2 paper
3 paper clip

Here is the chart on the paper.

object	Bending	Attracted to magnets	catches on fire easily
1	yes	NO	NO
2	yes	NO	yes
3	yes	yes	NO

The three objects are correctly identified in part a and the physical characteristics used in their identification are explained. In part b, the objects are not separated into two groups. This table was copied from the prompt.

Score Point 1

❹ The paper clip is object 3.
The piece of paper is object 2.
And the rubber eraser is object 1.

The three objects are correctly identified in part a. However, the response does not include data from the table that supports these identifications. Part b, sorting into two groups, was not attempted.

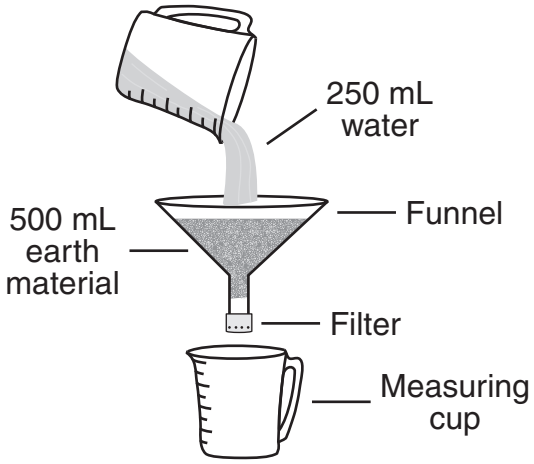
Score Point 0

❹ The middel of the paper clip is magnetic and the rubber eraser will deflect the magnetic force.

Nothing correct.

ESS1 (K-4) INQ-2 Students will use results from an experiment to draw conclusions about how water interacts with Earth materials (e.g., percolation, erosion, frost heaves).

5 A teacher tests four different earth materials to see how well each material drains water. The setup for the test is shown below.



The teacher follows the steps listed below for each earth material.

- Collect the water that flows through the earth material for 2 minutes.
- Measure the amount of water collected.

Which measuring cup shows the results for the earth material that drains water **most slowly**?

A.

B.

C.

D.

ESS1 (K-4) SAE-4 Students will explain how wind, water, or ice shape and reshape the Earth's surface.

6 How are the effects of wind similar to the effects of running water?

A. Both form rocks.
B. Both form valleys.
C. Both carry small pieces of earth material from one place to another.
D. Both break apart rocks by getting into cracks and freezing.

ESS1 (K-4) POC-5 Students will, based on data collected from daily weather observations, describe weather changes or weather patterns.

7 Fog is a cloud that touches the ground. The table below lists several weather conditions and tells if fog forms in these conditions.

Weather Conditions

Air Temperature Near Ground	Ground Temperature	Air	Does Fog Form?
50°F	35°F	Moist	Yes
50°F	70°F	Moist	No
40°F	60°F	Dry	No
35°F	25°F	Moist	Yes
5°F	35°F	Dry	No

Based on the information in the table, what weather conditions are needed for fog to form?

A. The air must be dry and cooler than the ground.
B. The air must be dry and warmer than the ground.
C. The air must be moist and cooler than the ground.
D. The air must be moist and warmer than the ground.

LS1 (K-4) SAE-2	Students will identify the basic needs of plants and animals in order to stay alive (i.e., water, air, food, space).

8 A mouse lives in a very dry area. What will be **hardest** for the mouse to find?

A. air
B. food
C. space
D. water

LS3 (K-4) SAE-7	Students will, using information (data or scenario), explain how changes in the environment can cause organisms to respond (e.g., survive there and reproduce, move away, die).

9 Skunks eat mostly insects during the spring, summer, and fall. During the winter, however, skunks eat mostly seeds and nuts.

Why do skunks eat seeds and nuts instead of insects during the winter?

A. Skunks cannot find seeds and nuts during spring, summer, or fall.
B. Skunks cannot find insects during the winter.
C. Skunks live outside in the summer and in underground dens in the winter.
D. Skunks move quickly in the summer and slowly in the winter.

LS4 (K-4) POC-9	Students will distinguish between characteristics of humans that are inherited from parents (i.e., hair color, height, skin color, eye color) and others that are learned (e.g., riding a bike, singing a song, playing a game, reading).

10 A young boy has brown eyes. What is the **most likely** reason he has brown eyes?

A. The boy has an older sister who has brown eyes.

B. The boy lives in a cold climate.

C. The boy inherited brown eyes from his birth parents.

D. The boy has brown hair.

Broad Area of Inquiry:	**Conducting Investigations**
Inquiry Construct 8:	Use accepted methods for organizing, representing, and manipulating data.

❶ Use the data you recorded in **Data Table 1** to graph the median amount of pollen you were able to pick up with each texture. Label and title your graph.

Scoring Guide

Score	Description
3	The response demonstrates a thorough understanding of how to accurately represent data in a graph. The response includes a bar graph of the collected data with an appropriate title, axes, labels, and numerical data for each texture plotted.
2	The response demonstrates a general understanding of how to accurately represent data in a graph.
1	The response demonstrates a limited understanding of how to accurately represent data in a graph.
0	Response is incorrect or irrelevant to the skill or concept being measured.
Blank	No response

Training Notes:

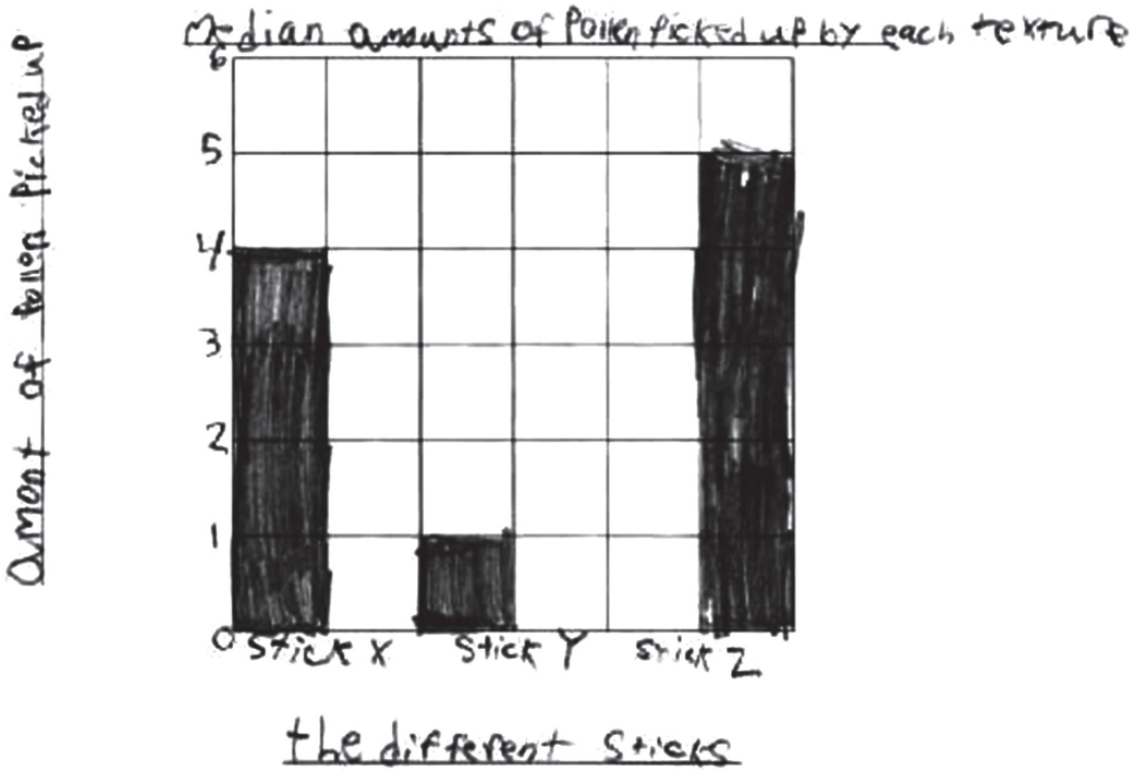
- Title: Median Amount of Pollen Picked Up by Each Texture
- The labels on the *x*-axis should include the three textures tested.
- The medians for each texture should match the medians in Data Table 1.
- The scale on the *y*-axis should reflect the median amount of pollen collected by each texture. The range on the graph should be from 0 to 5.
- Must be a bar graph, not a histogram for a 3-point score.

Score Point 3

Data Table 1: Median Amount of Pollen Picked Up by Each Texture

Stick	Median
X	4
Y	1
Z	5

❶ Use the data you recorded in **Data Table 1** to graph the median amount of pollen you were able to pick up with each texture. Label and title your graph.



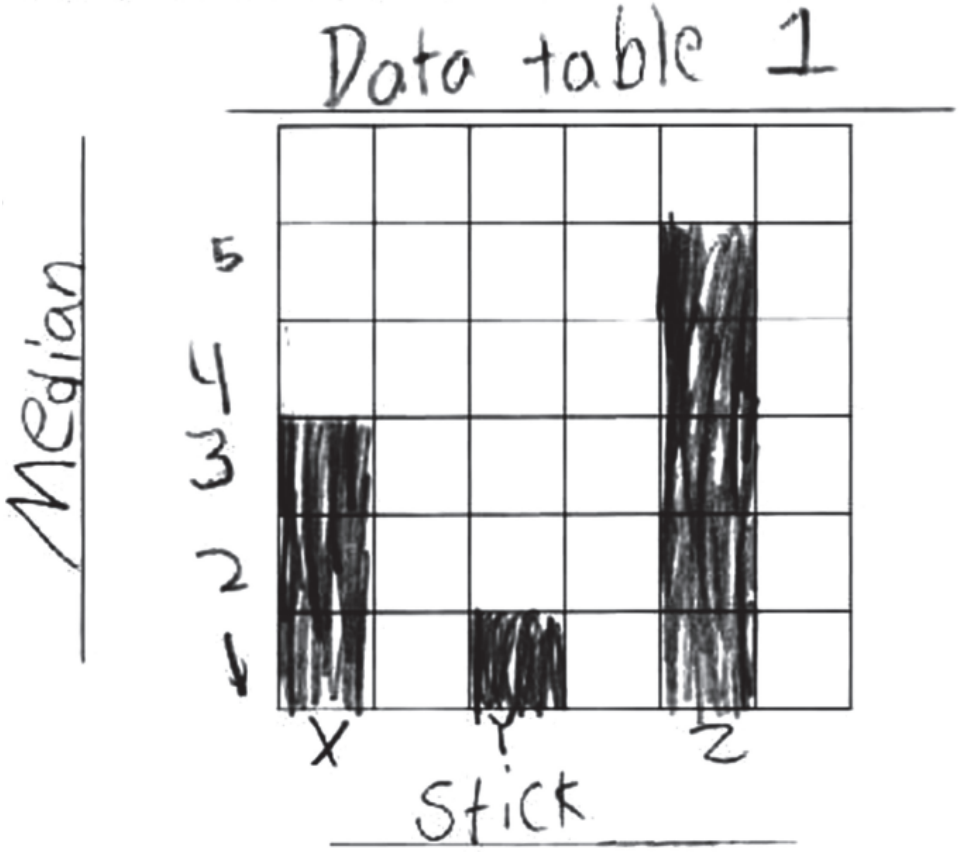
All elements of the graph are correct and the medians are correctly plotted.

Score Point 2

Data Table 1: Median Amount of Pollen Picked Up by Each Texture

Stick	Median
X	3
Y	1
Z	5

❶ Use the data you recorded in **Data Table 1** to graph the median amount of pollen you were able to pick up with each texture. Label and title your graph.



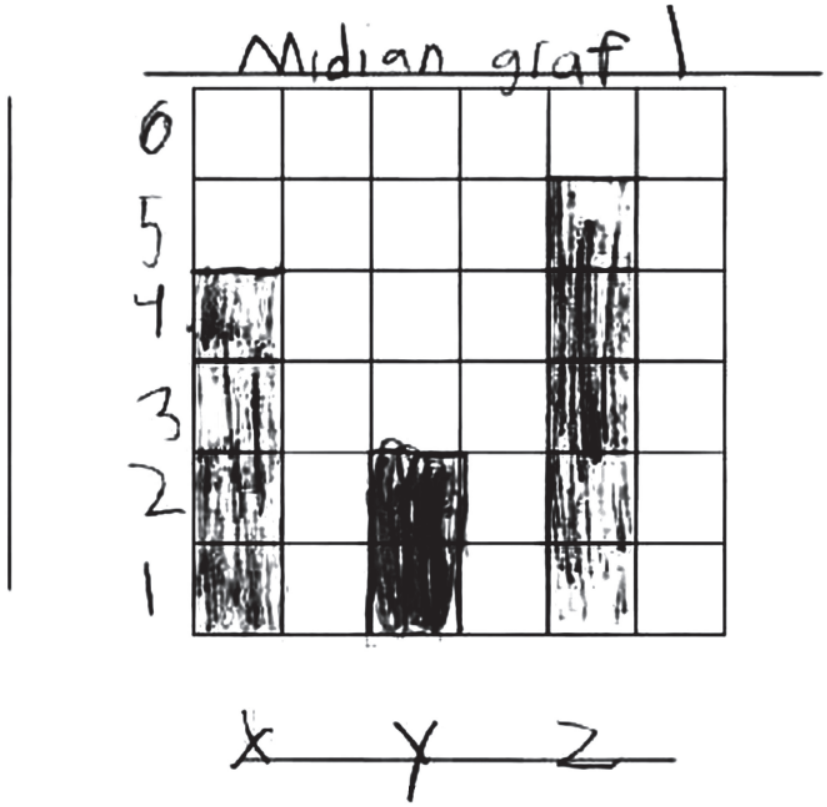
The medians are correctly plotted. The title of the graph is incorrect and the label for the *y*-axis does not specifically identify what median is being graphed. The numbers on the *y*-axis are not aligned with the lines on the graph and do not begin with zero.

Score Point 1

Data Table 1: Median Amount of Pollen Picked Up by Each Texture

Stick	Median
X	4
Y	2
Z	5

❶ Use the data you recorded in **Data Table 1** to graph the median amount of pollen you were able to pick up with each texture. Label and title your graph.



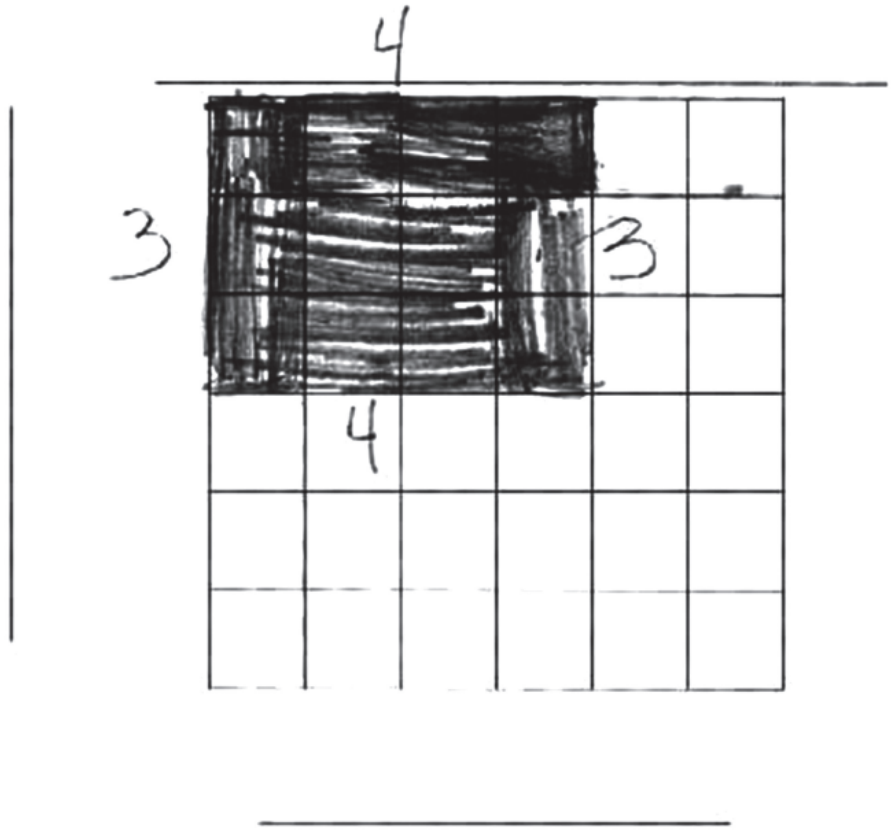
The medians are plotted correctly. The title and label for the *y*-axis are incomplete and there is no label on the *y*-axis. The numbers on the *y*-axis are not aligned with the lines on the graph and do not begin with zero.

Score Point 0

Data Table 1: Median Amount of Pollen Picked Up by Each Texture

Stick	Median
X	3
Y	1
Z	4

❶ Use the data you recorded in **Data Table 1** to graph the median amount of pollen you were able to pick up with each texture. Label and title your graph.



Nothing correct.

Broad Area of Inquiry:	**Conducting Investigations**
Inquiry Construct 8:	Use accepted methods for organizing, representing, and manipulating data.

❷ Use the data you recorded in **Data Table 2** to graph the amount of pollen you were able to drop off with each texture. Label and title your graph.

Scoring Guide

Score	Description
3	The response demonstrates a thorough understanding of how to accurately represent data in a graph. The response includes a bar graph of the collected data with an appropriate title, axes labels, and numerical data for each texture plotted.
2	The response demonstrates a general understanding of how to accurately represent data in a graph.
1	The response demonstrates a limited understanding of how to accurately represent data in a graph.
0	Response is incorrect or irrelevant to the skill or concept being measured.
Blank	No response

Training Notes:

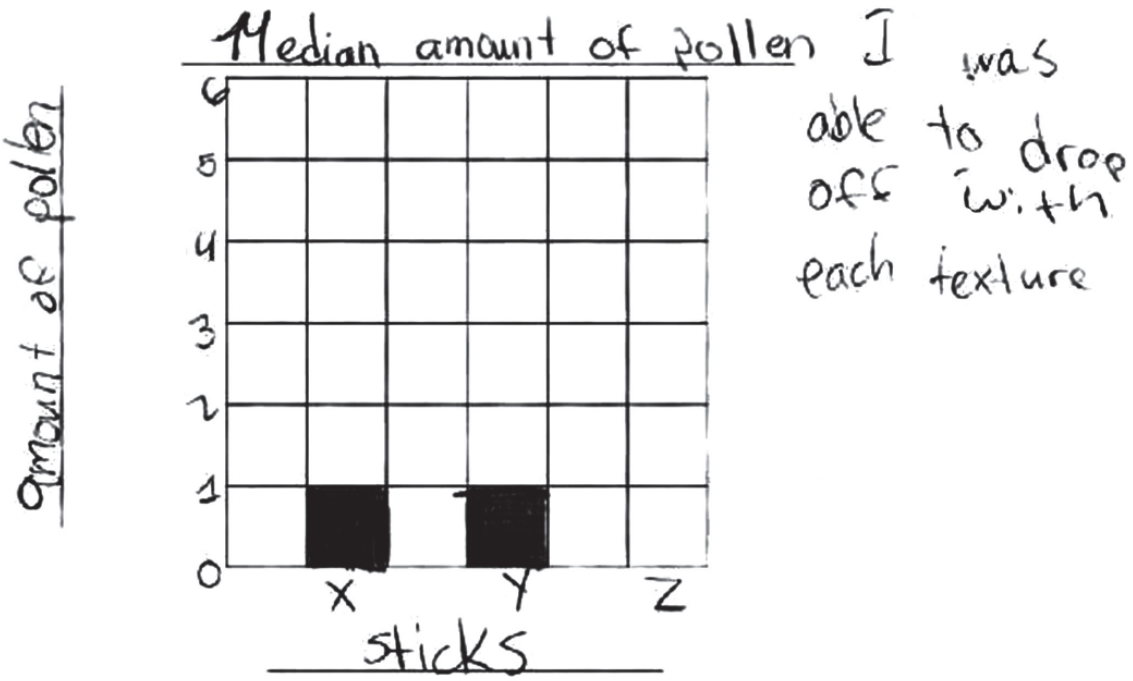
- Title: Median Amount of Pollen Dropped Off by Each Texture
- The labels on the *x*-axis should include the three textures tested.
- The medians for each texture should match the medians in Data Table 2.
- The scale on the *y*-axis should reflect the median amount of pollen dropped off by each texture. The range on the graph should be from 0 to 5.
- Must be a bar graph, not a histogram, for a 3-point score.

Score Point 3

Data Table 2: Median Amount of Pollen Dropped Off by Each Texture

Stick	Median
X	1
Y	1
Z	0

❷ Use the data you recorded in **Data Table 2** to graph the amount of pollen you were able to drop off with each texture. Label and title your graph.



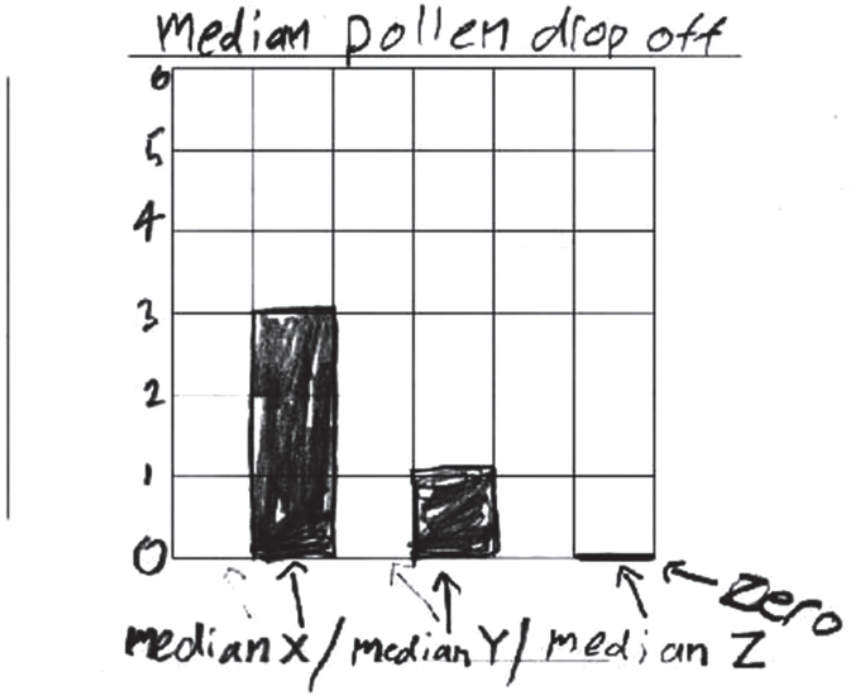
All elements of the graph are correct and the medians are correctly plotted.

Score Point 2

Data Table 2: Median Amount of Pollen Dropped Off by Each Texture

Stick	Median
X	3
Y	1
Z	0

❷ Use the data you recorded in **Data Table 2** to graph the amount of pollen you were able to drop off with each texture. Label and title your graph.



The medians are correctly plotted and the scale is correct. There is no label for the *y*-axis. The *x*-axis is either incorrectly labeled as the median of the various sticks, or there is no *x*-axis label.

Score Point 1

Data Table 2: Median Amount of Pollen Dropped Off by Each Texture

Stick	Median
X	2
Y	0
Z	1

❷ Use the data you recorded in **Data Table 2** to graph the amount of pollen you were able to drop off with each texture. Label and title your graph.

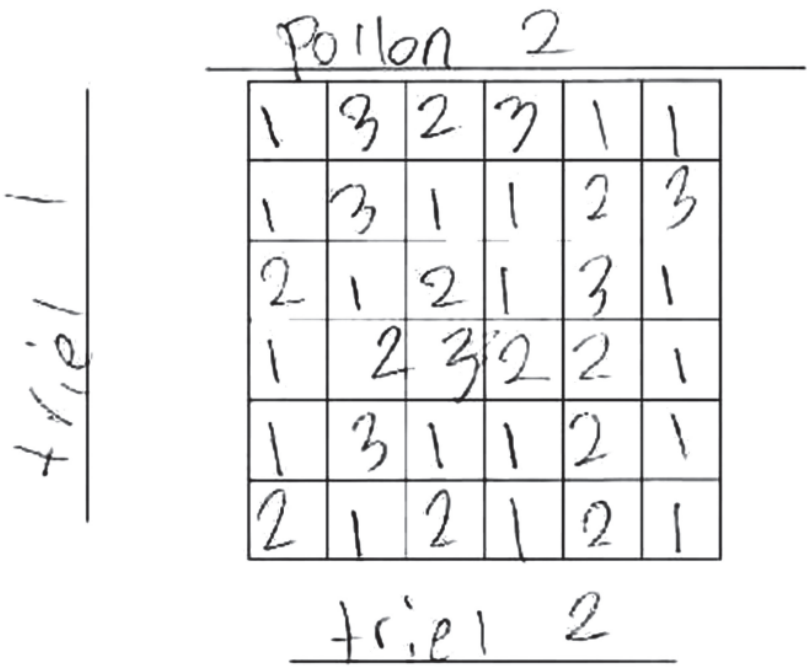
The medians appear to be plotted correctly but with no *y*-axis label or scale, it cannot be adequately determined. The *x*-axis label does not specify to what the letters refer. The title to the graph is inadequate to describe its contents.

Score Point 0

Data Table 2: Median Amount of Pollen Dropped Off by Each Texture

Stick	Median
X	2
Y	1
Z	1

❷ Use the data you recorded in **Data Table 2** to graph the amount of pollen you were able to drop off with each texture. Label and title your graph.



Nothing correct.

Broad Area of Inquiry:	**Conducting Investigations**
Inquiry Construct 10:	Summarize results based on data.

❸ Look at your description of the pollinating sticks in the table on page 4 in your Inquiry Booklet.

Use your data (tables and graphs) to explain how the texture of the material on each stick affects the amount of pollen that it can both pick up and drop off.

Scoring Guide

Score	Description
2	The response demonstrates a general understanding of summarizing results based on data. The response relates the results of the investigation to the texture of a good pollinating material.
1	The response demonstrates a limited understanding of summarizing results based on data.
0	Response is incorrect or irrelevant to the skill or concept being measured.
Blank	No response

Training Notes:

- Texture X is fuzzy and furry, and the pollen sticks well to its texture.
- Texture X was not too sticky, so it could drop off the pollen as well as pick it up.
- Texture Z picked up a lot of pollen, but it was too sticky to drop off much pollen.
- Texture Y was too smooth to pick up very much pollen and dropped off very little pollen.

Score Point 2

3 Look at your description of the pollinating sticks in the table on page 4 in your Inquiry Booklet.

Use your data (tables and graphs) to explain how the texture of the material on each stick affects the amount of pollen that it can both pick up and drop off.

Stick x is Fuzzy so it makes it easy for the pollen to stick to the tiny hair and makes it easy to drop off too. Stick Y is Rough so it is difficult to pick up pollen yet easy to drop it off. Stick Z is stick so it makes it very easy to pick up pollen yet very difficult to drop it.

Thoroughly describes the texture of each of the three sticks and its ability to pick up and drop off pollen.

Score Point 1

❸ Look at your description of the pollinating sticks in the table on page 4 in your Inquiry Booklet.

Use your data (tables and graphs) to explain how the texture of the material on each stick affects the amount of pollen that it can both pick up and drop off.

I thought that stick X was the easiest to have pollen fall out because it was very soft. I thought that stick Y was a little harder to get pollen to come out because it was a little rough. I thought that stick Z was the hardest to make pollen come out because it was very sticky.

The response describes how the texture affected each stick's ability to drop off pollen, but does not describe their ability to pick up pollen.

Score Point 0

❸ Look at your description of the pollinating sticks in the table on page 4 in your Inquiry Booklet.

Use your data (tables and graphs) to explain how the texture of the material on each stick affects the amount of pollen that it can both pick up and drop off.

Stick X was soft stick Y was smoth and rough and stick Z was stiky.

The response does not describe the ability of each stick to pick up or drop off pollen, it provides only the texture.

Broad Area of Inquiry:	**Conducting Investigations**
Inquiry Construct 9:	Collect sufficient data to study question, hypothesis, or relationships.

❹ Which texture works best to pollinate a flowering plant? Use your data (tables and graphs) to explain your answer.

Scoring Guide

Score	Description
2	The response demonstrates a general understanding of how to collect sufficient data to study question. The response answers the research question and uses the graphs clearly to support the answer.
1	The response demonstrates a limited understanding of how to collect sufficient data to study question.
0	Response is incorrect or irrelevant to the skill or concept being measured.
Blank	No response

Training Notes:

- Texture X was the most effective material to both pick up and drop off pollen.
- The data show that Texture X was able to pick up a medium amount of pollen and drop off a medium amount of pollen.
- Citing other textures with reasonable support (for pick up and drop off of pollen) is acceptable.
- Identifying a texture is not enough to receive credit.

Score Point 2 (Example A)

❹ Which texture works best to pollinate a flowering plant? Use your data (tables and graphs) to explain your answer.

Texture x works the best because it picks up a median of 4 and drops off a median of 3. That means it only had a little bit of pollen left when it was done pollenating.

Stick X was selected based on its texture. Specific data from the investigation was used to support the selection.

Score Point 2 (Example B)

❹ Which texture works best to pollinate a flowering plant? Use your data (tables and graphs) to explain your answer.

The texture that works best to pollinate a plant is Stick X because it is fuzzy, so it can easily pick up a good amount, and it isn't so sticky it can't drop off anything. It can pick up and drop off very well.

Stick X was selected based on its fuzzy texture. Information gained from the investigation supports the selection.

Score Point 1

❹ Which texture works best to pollinate a flowering plant? Use your data (tables and graphs) to explain your answer.

I would say X because X was really good in kicking up and really good in dropping off.

Stick X is selected but the response does not describe the texture or why it worked best.

Score Point 0

❹ Which texture works best to pollinate a flowering plant? Use your data (tables and graphs) to explain your answer.

I think the letter Y works best to pollinate a floweing plant.

Incorrect.

Broad Area of Inquiry:	**Developing and Evaluating Explanations**
Inquiry Construct 12:	Use evidence to support and justify interpretations and conclusions or explain how the evidence refutes the hypothesis.

❺ Check the box next to the statement that best describes whether your data supported your prediction.

☐ Yes, the data **supported** my prediction.

☐ No, the data **did not support** my prediction.

Use evidence from your investigation to explain why your data (tables and graphs) and observations did or did not support your prediction.

Scoring Guide

Score	Description
2	The response demonstrates a general understanding of explaining how to use evidence to support or refute the hypothesis. The response correctly identifies whether the data supports or refutes the original prediction and uses specific data from the investigation to explain why the prediction is or is not supported.
1	The response demonstrates a limited understanding of explaining how to use evidence to support or refute the hypothesis.
0	Response is incorrect or irrelevant to the skill or concept being measured.
Blank	No response

Training Notes:

- The response has a checked-off box that matches the original prediction based on the investigation's evidence.
- The response uses examples from the data to explain why the original prediction is or is not supported. Student uses two or more relevant examples from the data and/or observations in the response.

Score Point 2

I predict that a sticky texture will work the best

because sticky things can pick up the most amount of pollen because sticky textures pick up more things than other textures.

5 Check the box next to the statement that best describes whether your data supported your prediction.

- ☐ Yes, the data **supported** my prediction.
- ☑ No, the data **did not support** my prediction.

Use evidence from your investigation to explain why your data (tables and graphs) and observations did or did not support your prediction.

The evidence is that sticky things pick up the most because the median was 5 but, it drope off nothing which was 0. So the best texture was fuzzy because its picked up median was 4 and its drop of median was 3.

The response explains why sticky was not the best and why fuzzy was better. Data and information from the investigation is used in the response.

Score Point 1

I predict that the stickyer is the best.

because thats how they get Pollen from one Plant to another.

❺ Check the box next to the statement that best describes whether your data supported your prediction.

- ☐ Yes, the data **supported** my prediction.
- ☑ No, the data **did not support** my prediction.

Use evidence from your investigation to explain why your data (tables and graphs) and observations did or did not support your prediction.

It did not because x was the best because it Pick uP a lot and droPPed off a lot.

The response does not fully explain why the prediction was not supported by the investigation or why Stick X was the better choice.

Score Point 0

I predict the bee is spikey.

because the antennas on a bees.

❺ Check the box next to the statement that best describes whether your data supported your prediction.

- [x] Yes, the data **supported** my prediction.
- [ ] No, the data **did not support** my prediction.

Use evidence from your investigation to explain why your data (tables and graphs) and observations did or did not support your prediction.

It did because the data was good

Irrelevant.

Broad Area of Inquiry:	**Developing and Evaluating Explanations**
Inquiry Construct 13:	Communicate how scientific knowledge applies to explain results, propose further investigations, or construct and analyze alternative explanations.

❻ Explain why the texture of a bee's body is important to a flowering plant. Use what you learned in your investigation about texture **and** what you know about how bees help plants.

Scoring Guide

Score	Description
2	The response demonstrates a general understanding of communicating how scientific knowledge applies to explain results. The response explains why the texture of a bee's body is important to a flowering plant.
1	The response demonstrates a limited understanding of communicating how scientific knowledge applies to explain results.
0	Response is incorrect or irrelevant to the skill or concept being measured.
Blank	No response

Training Notes:

- Response explains that the texture on a bee's body helps pick up and drop off pollen.
- The bee's work of picking up and dropping off pollen is important to a flowering plant because the plant needs to be pollinated to bear fruit or produce seeds.

Score Point 2

6 Explain why the texture of a bee's body is important to a flowering plant. Use what you learned in your investigation about texture **and** what you know about how bees help plants.

I Know that bees are the main pollinators and flowering plants depend on bees. If the texture of a bees body didn't pick up or drop off pollen plants wouldn't grow fruits, so the texture of a bees body is really important to the whole world.

The response communicates what was learned in the investigation and how it applies to the texture of a bee's body.

Score Point 1

6 Explain why the texture of a bee's body is important to a flowering plant. Use what you learned in your investigation about texture **and** what you know about how bees help plants.

The texture of the bee's body is important for pollenating a plant because the pollen has to be able to cling to the bee's body, but also make sure it's not to clingy because then you can't drop off the pollen.

The response is correct but does not specifically address the texture of the bee's body.

Score Point 0

6 Explain why the texture of a bee's body is important to a flowering plant. Use what you learned in your investigation about texture **and** what you know about how bees help plants.

Bee's help plants because their texture.

Irrelevant. This information is in the prompt.

Broad Area of Inquiry:	**Developing and Evaluating Explanations**
Inquiry Construct 13:	Communicate how scientific knowledge applies to explain results, propose further investigations, or construct and analyze alternative explanations.

❼ What can the students in the classroom in the story do to pollinate the strawberry plants without the help of bees? Based on the results of your investigation, explain your answer.

Scoring Guide

Score	Description
2	The response demonstrates a general understanding of communicating how scientific knowledge applies to explain results or to propose further investigations. The response connects the investigation results to a suggestion for the students in the story to help them pollinate the strawberry plants in their classroom without bees.
1	The response demonstrates a limited understanding of communicating how scientific knowledge applies to explain results or to propose further investigations.
0	Response is incorrect or irrelevant to the skill or concept being measured.
Blank	No response

Training Notes:

- The response explains how the students in the story could hand-pollinate the strawberry plants (or other acceptable methods).
- The hand pollinator could be on a stick, similar to the one students tested; it would need to be a material that is fuzzy or something else that could both pick up and drop off the pollen as shown in the investigation.

Score Point 2

❼ What can the students in the classroom in the story do to pollinate the strawberry plants without the help of bees? Based on the results of your investigation, explain your answer.

Students can put pollen on a fuzzy stick and then tap it on the flower. They can do that because the pollen carried on a fuzzy stick to the plant is the same things the bee's dose the plants will grow the same.

The response provides a practical solution that is based on what was learned in the investigation.

Score Point 1

❼ What can the students in the classroom in the story do to pollinate the strawberry plants without the help of bees? Based on the results of your investigation, explain your answer.

The students could use fuzzy sticks to move pollen from one flower to another on their own.

Provides a practical solution but the explanation is limited, with no reference to the investigation.

Score Point 0

❼ What can the students in the classroom in the story do to pollinate the strawberry plants without the help of bees? Based on the results of your investigation, explain your answer.

they can use something sticky and find a flower with pollen in it.

The response does not explain why using something sticky will pollinate the plants in the classroom.

Broad Area of Inquiry:	**Developing and Evaluating Explanations**
Inquiry Construct 12:	Use evidence to support and justify interpretations and conclusions or explain how the evidence refutes the hypothesis.

8 Look at the pictures of the pollinators below.

Bee

Butterfly

Hummingbird

Based on what you learned in your investigation about the textures of materials, describe what makes these animals good pollinators. Use evidence from your investigation to support your answer.

Scoring Guide

Score	Description
2	The response demonstrates a general understanding of how to use evidence to support and interpret a scientific understanding. The response includes an explanation of how the texture of the body of a pollinator—bee, butterfly, and hummingbird—is similar to the texture of the fuzzy material.
1	The response demonstrates a limited understanding of how to use evidence to support and interpret a scientific understanding.
0	Response is incorrect or irrelevant to the skill or concept being measured.
Blank	No response

Training Notes:

- The response explains how the texture of the pollinator's body is similar to the texture that picked up and dropped off the most amount of pollen.
- The "fuzzy" texture is important for the pollinator to be able to gather the pollen at one flower and drop off the pollen at the next flower.

Score Point 2

8 Look at the pictures of the pollinators below.

Bee

Butterfly

Hummingbird

Based on what you learned in your investigation about the textures of materials, describe what makes these animals good pollinators. Use evidence from your investigation to support your answer.

They all collect pollen what ever way they do it. They all have either sticky or fuzzy parts on them so that they can pollnate. When we did the experiment it was X & Y that were the best. Sticky and furry / fuzzy.

The response correctly relates the results of the investigation to the effectiveness of the pollinators' body textures.

Score Point 1

8 Look at the pictures of the pollinators below.

Bee

Butterfly

Hummingbird

Based on what you learned in your investigation about the textures of materials, describe what makes these animals good pollinators. Use evidence from your investigation to support your answer.

These animals are good pollinators since they all have the right texture, soft.

The response describes the pollinators' body texture but does not refer to the investigation to support the response.

Score Point 0

8 Look at the pictures of the pollinators below.

Bee

Butterfly

Hummingbird

Based on what you learned in your investigation about the textures of materials, describe what makes these animals good pollinators. Use evidence from your investigation to support your answer.

This animals are good pollinators beacuse they make flowers grow so as frit grow.

Irrelevant.