Bees and Honey Informational Performance Task

Task:

Your class is preparing a science fair exhibit that will include photos of bees, samples of honey, and interesting facts about both bees and honey. You have been asked to write an article that can be read aloud at the science fair that explains how honey is made and harvested, and that gives some of the reasons people may want to use honey. Before you decide what you will say, you do some research and find three sources (three articles with illustrations) that provide information about bees and honey.

After you have examined these sources, you will answer some questions about them. Briefly scan the articles and the three questions that follow. Then, go back and review the sources carefully to gain the information you will need to answer the questions and write an informational piece for the science fair.

In Part 2, you will write an informational piece that explains how honey is made and harvested, and that gives some of the reasons people may want to use honey.

Directions for Beginning:

You will now think about three sources. You can reread any of the sources as often as you like.

Research Questions:

After reviewing the sources, use the rest of the time in Part 1 to answer three questions about them. For the multiple-choice question, circle the letter of the correct answer. Your answers to these questions will be scored. Also, your answers will help you think about the information you have read, which should help you write your informational article.

You may review your notes when you think it would be helpful. They will be available to you in Part 1 and Part 2 of the performance task.

Part 1

Sources for Performance Task:

Source #1
This article about how bees make honey is based on the following sources:

- http://www.livescience.com/37611-what-is-honey-honeybees.html
- http://animals.nationalgeographic.com/animals/bugs/honeybee/

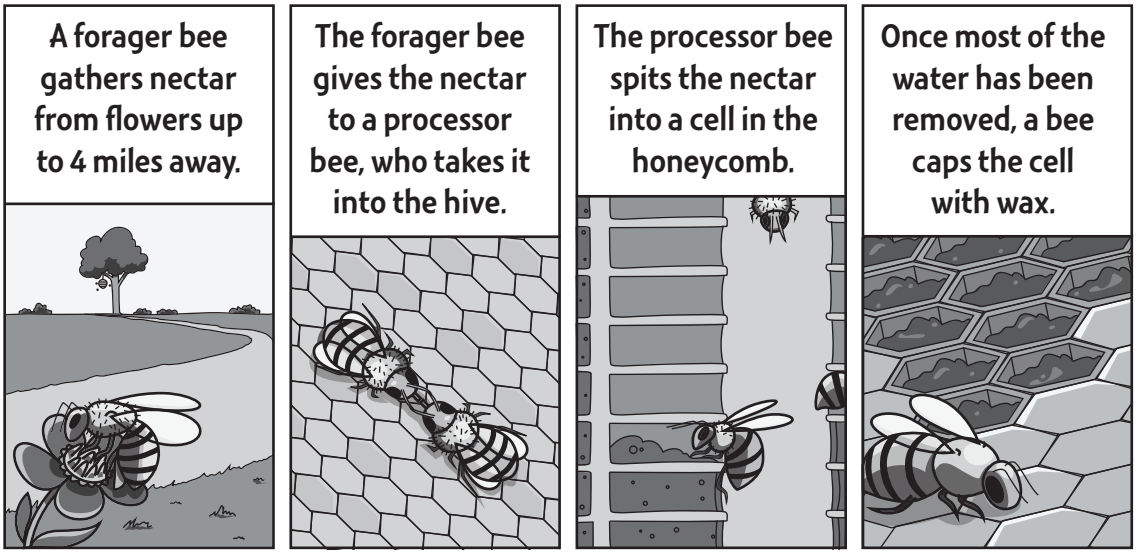
How Bees Make Honey

by Gerald Klaas

1 During the warm months, bees eat nectar and pollen that they gather from flowers. But during the cold months, there is little nectar or pollen to be found. Even if there were, it's too cold for bees to leave their hives anyway. This is why bees must make honey. Honey-making takes lots of time and energy. Luckily, bees have a lot of both.

2 Most of the bees in a hive are worker bees. But the worker bees do many different jobs. Some bees, called forager bees, fly outside the hive to collect nectar from flowers. The forager bees bring the nectar back to the entrance of the hive. They give the nectar to another kind of worker bee called a processor bee, and then go back out to find more nectar. The processor bee takes the nectar into the hive and spits it into a wax cell in the honeycomb. The bees must repeat these steps many times to fill even one wax cell.

3 At this point, the nectar is still made mostly of water. To ripen the nectar into honey, other worker bees fan it with their wings to dry it out. Once most of the water has evaporated, another worker bee puts a cap on the cell to keep water from getting in. Honey has to have very little water so no germs can grow in it. If germs could grow in honey, bees would get sick when they ate it.



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Source 1: "How Bees Make Honey"

TYPE OF BEE	WHAT IT DOES

Source #2

This article about honey is based on information in the following sources:

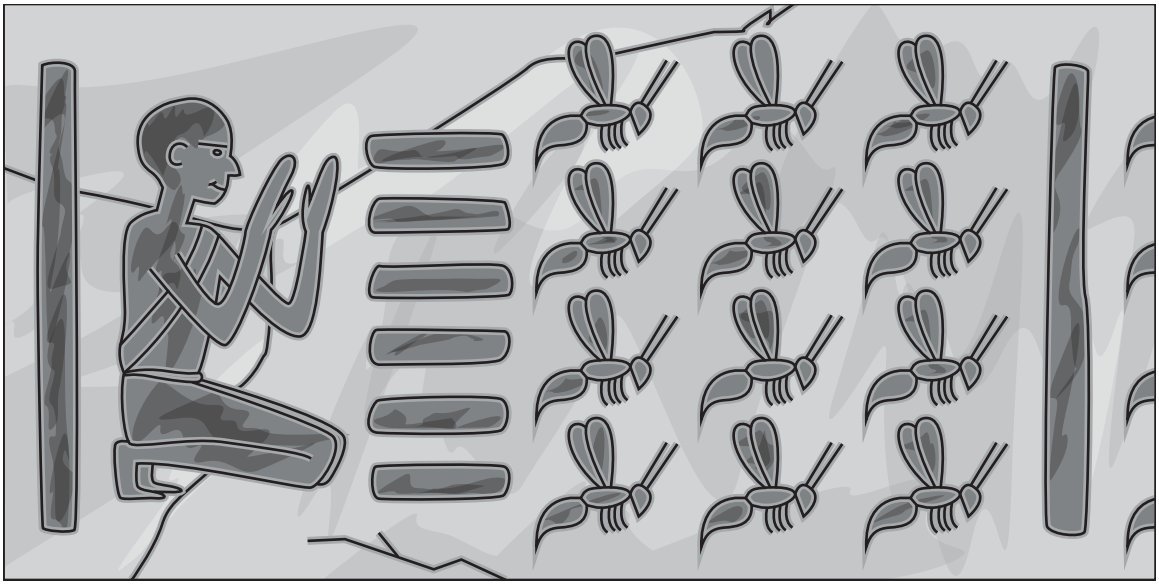
- http://www.webmd.com/diet/features/medicinal-uses-of-honey
- https://www.msu.edu/unit/msuaa/magazine/s98/honey.htm

Honey: Nature's Germ-Killer

by Jessalyn Warren

1 You know that honey can make your cereal sweeter. You also know it tastes great on pancakes. But did you know it can even be used to heal you? Early scientists noticed that honey doesn't spoil like other foods. More recent studies have shown that germs just don't grow in honey. (After all, because bees use honey as food in colder months, it's important that honey is safe for them to eat!) Studies even show that honey can kill many kinds of germs. These healing properties have been known since the earliest parts of history. Later, when antibiotics were invented, honey went out of style as a medicine. But today, doctors are taking a closer look at honey's healing powers.

2 Many early people used honey, not just as food, but as medicine. From the sacred books of China to the myths of the ancient Greeks, every ancient religion sang the praises of honey's healing power. The ancient Egyptians were one of the first cultures to use honey for healing. Egyptian writings from nearly 4,000 years ago tell of honey used as a salve to heal wounds. When historians opened the tomb of King Tut in the early 20th century, they found jars of honey inside. The honey in the jars was over 3,000 years old, but it was still in liquid form. It even had a hint of the scent of fresh honey.



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3 As history unfolded, people continued to find ways to use honey to heal. The ancient Greeks also thought of honey as both a perfect food and a medicine. One Greek myth tells of Zeus being fed honey as a child to keep him strong. The Greek philosopher Aristotle believed that honey made people live longer. Dioscorides, a Greek doctor and surgeon, wrote that the sweet liquid could heal stomach diseases, improve vision, and even get rid of coughs. Later, in the ninth and tenth centuries, Muslim doctors wrote of even more uses for honey. A doctor named Al Razi advised people to use honey water for sore gums. Ibn Sina, another Muslim doctor, wrote about using honey to treat lung disease.

4 Honey continued to be a favorite healing tool well into the 20th century. Russian soldiers during World War I used honey to keep wounds from getting infected. Scientists became interested in discovering why honey worked against germs. Researchers discovered that honey contained hydrogen peroxide. Hydrogen peroxide is a water-like liquid that has been used to clean wounds for centuries. This was only the beginning of the story of how honey works against germs.

5 But the rest of the story would have to wait to be told. In the second half of the 20th century, human-made medicines took the wheel. Honey was pushed to the back seat of medicine. As time went on, antibiotics became the favored treatments for illnesses and infections caused by germs. They could be packaged in pills, liquids, and ointments for easy dosing. They could cure many illnesses that could not be cured before. Natural medicines like honey now seemed too old-fashioned.

6 Over time, though, doctors realized they had a new problem. Antibiotics just didn't work as well as they once had. After much study, scientists discovered why. Some germs had become immune to antibiotics. Even if an antibiotic killed most of the germs that were infecting a person, the germs that were immune could cause the infection to return. New antibiotics worked for a time. But the same problem always seemed to happen.

7 In fact, the problem is still happening today. So scientists are studying honey again. One reason scientists found that germs don't grow in honey is that it actually contains very little water. What water it does have is bound up with sugar. Germs do love sugar and feast on most sugary foods. But like people and other animals, germs need water to live. They can't access the water in honey.

8 Scientists already knew that honey contains hydrogen peroxide. But some kinds of honey called manuka honeys work another way. These honeys contain something called "manuka factor." It is even more powerful against germs than hydrogen peroxide. Scientists are now using both hydrogen peroxide and manuka honeys when antibiotics don't work. They are even using honey to help doctors treat some kinds of cancer. In this way, scientists are revisiting one of the world's most ancient medicines.

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Source 2: "Honey: Nature's Germ Killer"

USES FOR HONEY	WHY HONEY IS HELPFUL

Go On

Source #3

This article about honey is based on information in the following sources:

- http://www.keeping-honey-bees.com/
- http://www.organicbackyardbeekeeper.com/

The Joy of Beekeeping

by Jacob Neighbors

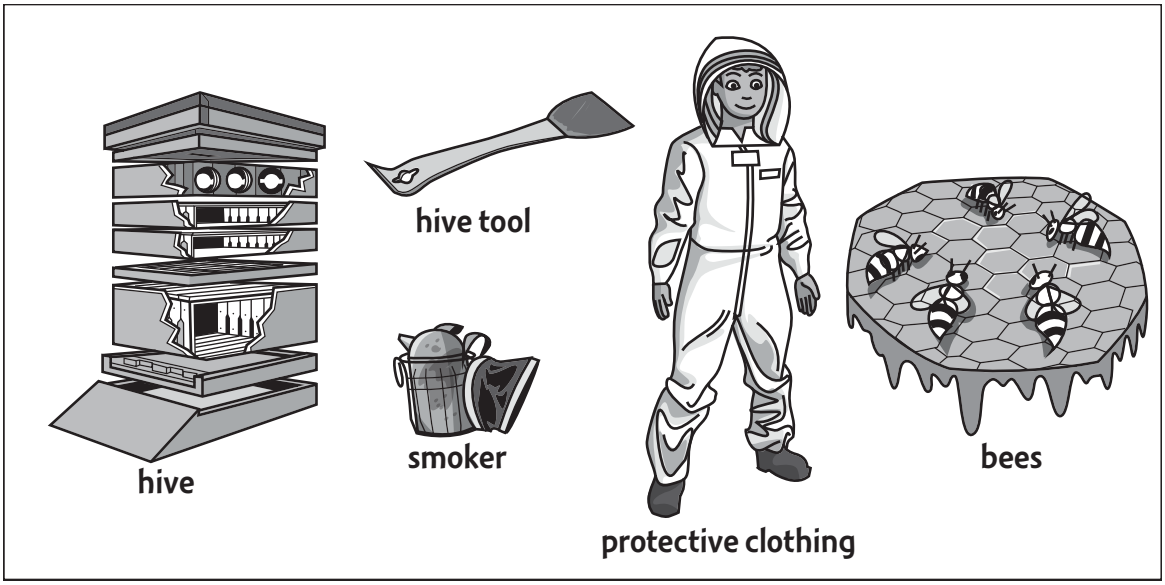
1 Have you ever wanted to make your own delicious honey? Well, you're not a bee, so you can't actually make honey yourself. But there is another way you can have fresh honey almost any time you want it: become a beekeeper! By being a beekeeper, you not only get to have access to a wonderful food. You also get to see an amazing process in action.

2 There's nothing in nature quite like a bee colony, where thousands of bees work together toward a single goal: making honey. In every colony, different bees have different jobs. For example, forager bees collect nectar from flowers, then bring it back to the hive. Processor bees store the nectar in honeycombs. Other worker bees fan the nectar with their wings to dry it out before it is sealed up in the comb's cells with wax. Keeping moisture out of the honey is extremely important. The low-water content helps keep the honey from spoiling, so that the bees have a food supply through the cold winter months.

3 So, how do you go about helping all those busy bees? Believe it or not, the first thing a wanna-be beekeeper should do is head to the doctor. This may seem like a strange first step, but it's important to be sure you're not allergic to bee stings before you work with these creatures. Honeybees are usually gentle, but they can sting when they feel threatened.

4 Once you've gotten the all-clear from your doctor, here's a list of the equipment you will need to start on your beekeeping journey:

- a hive (a large box that contains chambers for the bees to live in as well as frames that they will fill with honeycomb and later honey)
- a smoker (for calming the bees before you work with them)
- protective clothing (including a veil for your face)
- a hive tool (one end has a hook to lift frames from the hive, and the other end is a blade to cut the caps off the honeycomb so you can pour out the honey)
- and last, but certainly not least, the bees!



5 It's easier and safer to buy bees to populate your hive, instead of catching them in the wild. That's because when you buy bees, the package will come with a queen (she's kind of like the boss of a hive) and some workers. You will put the queen and the workers together in your hive to start making honey. With a queen in place, it won't take long for a new hive of bees to start making honey. Harvesting honey is sometimes called "robbing" the bees. But don't feel too bad. They can make more. And they will—they have to! Unlike humans, who simply enjoy honey as an incredibly delicious food, those hard-working bees depend on the golden goodness of honey to stay alive.

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Source 2: "The Joy of Beekeeping"

REASONS TO KEEP BEES	GETTING READY: ACTIVITIES & EQUIPMENT

1 Which **two** sources would be most helpful in supporting the idea that bees work together in and around their hives? Use details from the sources to support your answer.

2 Which important idea can be found in all three sources?

A Honey has very little water, and this helps keep germs from growing.

B People once used honey as medicine, and they are starting to again.

C Forager bees collect nectar from flowers, then they bring it back to the hive.

D Some people keep bees to make honey, and this requires special equipment.

3 Based on the three sources, what is one way that honey is important to bees? Use details from the passages to support your answer.

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Part 2

You will now review your sources, take notes, and plan, draft, revise, and edit your article. Now read your assignment and the information about well-written articles. Then begin your work.

Your assignment:

Your class is preparing a science fair exhibit that will include photos of bees, samples of honey, and interesting facts about both bees and honey.

Your assignment is to write an informational article that is several paragraphs long and that will help explain both how honey is made, and why people may want to use honey.

Make sure to have a main idea, clearly organize your article, and support your main idea with details from the three sources. Use your own words and develop your ideas clearly.

REMEMBER: A well-written informational article:

- has a clear main idea
- is well-organized and stays on the topic
- has an introduction and conclusion
- uses transitions
- uses details from the sources to support your main idea
- develops ideas clearly
- uses clear language
- follows rules of writing (spelling, punctuation, and grammar)

Now begin work on your informational article. Manage your time carefully so that you can

1. plan your article
2. write your article
3. revise and edit the final draft of your article

Planning Page

For Part 2, you are being asked to write an article that is several paragraphs long. Using your notes, plan your response in the space below.

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Drafting Page

Write a draft of your article on the lines below. Remember to check your notes and the plan for your article as you write.

Final Draft

Revise and edit the article you wrote on the previous page. Then write your final draft on the lines below.

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