



Grade Level: 3-5

Essential Skills: 4, 5, 9

NGSS: 4-LS1-1

CCSS: 3.RL.1, 3.RI.1, 3.SL.1, 4.RI.1, 4.SL.1, 5.RI.1, 5.SL.1

Time: 60 minutes

Materials:

- Beeswax pellets
- Coconut oil
- Shea butter
- Lip balm tubes
- Stir stick
- Pipette
- Lip balm tube rack
- Anatomy of a Worker Bee worksheet

AITC Library Resources:

Books:

The Beeman
These Bees Count
The Thing About Bees
Honey Bees: Letters from the Hive

More Lessons:

Busy Bees
Honey Bees: A Pollination Simulation
Flower Power

Lesson to Grow

The Buzz about Beeswax

Description:

Students explore the use of beeswax, a by-product in honey production, by developing a useful beeswax product.

Activity Directions:

Activity 1: Bee Anatomy

1. Ask students the following questions:
 - a. Why are honey bees important to humans?
 - b. Why kind of products come from bees? (ex. honey, lip balm, etc.)
2. Tell students that many products are made from the honey and beeswax that bees create. Today, we are going to look at the parts of a honey bee and how products like lip balm are created. Honey bees have three main body regions—the head, thorax, and abdomen. Use the [Honey Bee PowerPoint](#) to discuss the main parts of a worker bee.
3. Ask the students to label the parts of a worker bee on the *Anatomy of a Worker Bee* worksheet.
4. Review the [Beeswax: A By-product of Honey Production Powerpoint](#) with students to discuss how beeswax is produced and processed.
5. Ask the students to brainstorm a list of products that can be made from beeswax (i.e. lip balm, clay, candles, lotion, etc.).

Activity 2: Create Beeswax Lip Balm!

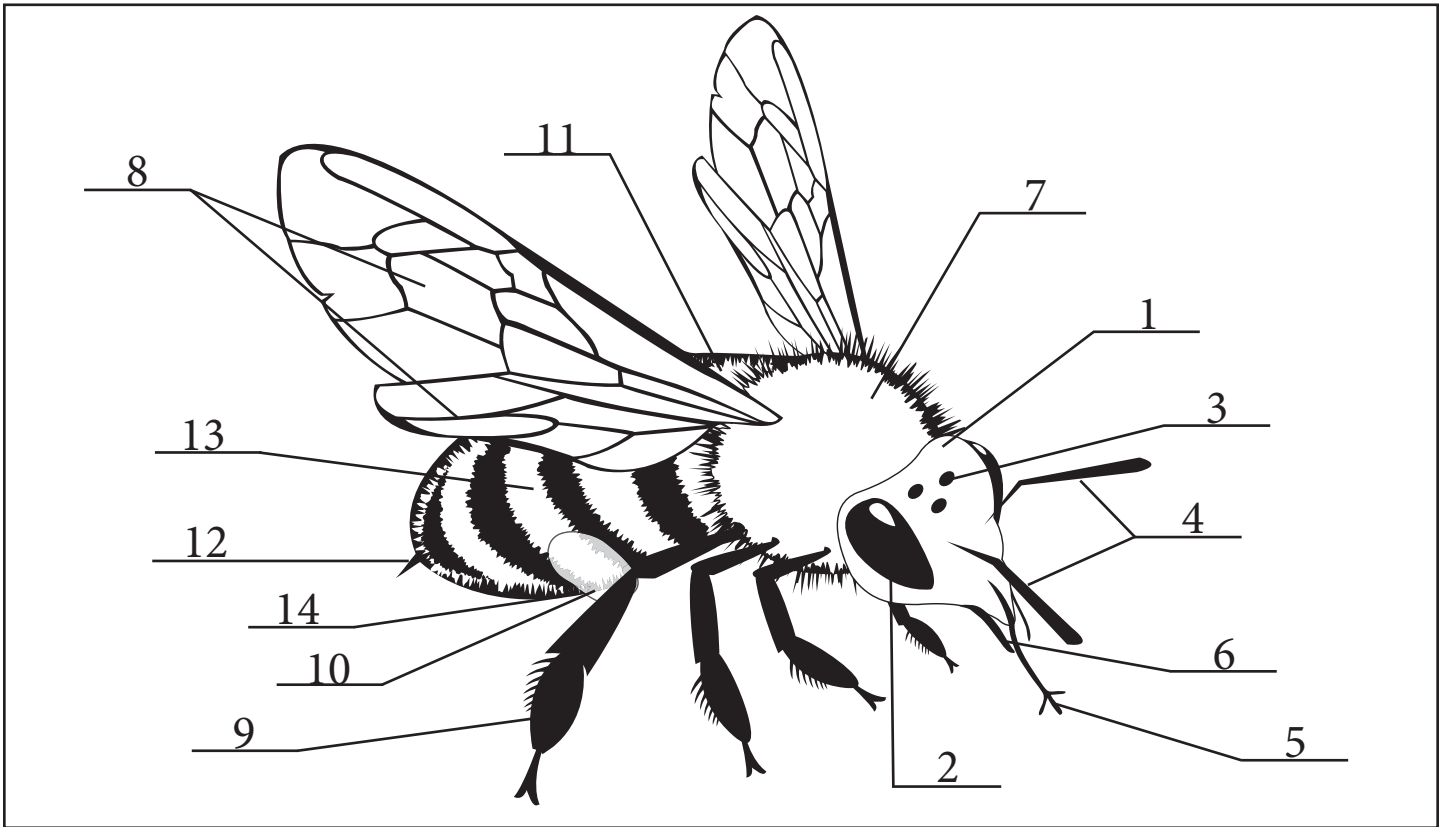
1. Decide to divide the class into groups or prepare the balm as a class.
2. Add equal parts of beeswax pellets, coconut oil and shea butter to a microwave safe bowl. (1 oz of each ingredient will fill approximately 10 lip balm tubes)
3. Microwave for 30 seconds and stir contents together using the wooden stir stick.
4. Repeat step 3 until the beeswax pellets have completely melted. It takes approximately 3-6 minutes for the contents to melt depending on quantity and microwave power.
5. *(Optional)* Add an essential oil to flavor your lip balm. Begin with 30 drops of flavor for 1 oz. of each ingredient and rub the oil on your lips or skin to test the scent. Add more as needed. Different oils will require different amounts of drops. Recommended oils include mint (use less), grapefruit or lavender. You may choose to divide the batch into smaller portions and create several flavors.
6. Add lip balm containers to the open spots in the holding tray by pushing the top of the lip balm container in the open hole. The bottom portion of the lip balm tube will be the legs of the stand. Spread out the tubes you will be filling throughout the tray to allow the tray to stand on its own.

7. Using a pipette, fill the tubes with the lip balm mixture.
8. Set aside and let the tubes cool until the lip balm becomes firm.
9. Remove the lip balm containers one at a time from the tray and cap the tubes.

Activity 3: Label your Balm!

1. Using the template provided with this lesson or a 2"x1" label have students create a label to wrap around their lip balm. Secure using tape or glue. You can also purchase the self adhesive type from the store.
2. Discuss with students and show examples of information commonly listed on a label. Be sure to include: a name of the lip balm, flavor and ingredients.

Anatomy of a Worker Bee



Directions: Match the description with the correct part of the bee by writing the corresponding letter on the appropriate line below. Label the number of each bee body part in its correct location on the bee diagram above.

- | | | |
|-------------------|-------|---|
| 1. head | _____ | c |
| 2. compound eye | _____ | j |
| 3. simple eyes | _____ | l |
| 4. antennae | _____ | e |
| 5. proboscis | _____ | m |
| 6. mandibles | _____ | k |
| 7. thorax | _____ | b |
| 8. wings | _____ | i |
| 9. legs | _____ | h |
| 10. pollen basket | _____ | d |
| 11. abdomen | _____ | f |
| 12. stinger | _____ | n |
| 13. honey sac | _____ | a |
| 14. wax glands | _____ | g |

- | | |
|----|--|
| a. | a stomach-like organ used to store nectar |
| b. | the middle region of the bee that contains the flight muscles, 4 wings, and 6 legs |
| c. | the front region of the bee that contains 2 compound eyes, 3 simple eyes, 2 antennae, mandibles, and the proboscis |
| d. | a collection of hairs where pollen is stored for transport |
| e. | movable feelers that detect smells and movement |
| f. | the rear region of the bee that contains organs for digestion, reproduction, and respiration as well as the stinger and wax glands |
| g. | glands that form and excrete wax |
| h. | used for walking, dusting antennae, brushing pollen off body hairs, and storing pollen |
| i. | beat 250 times per second allowing the bee to fly |
| j. | made up of tiny lenses that allow the bee to see ultraviolet light and visible light with the exception of red |
| k. | jaw-like structures used to knead wax and to chew honey and pollen |
| l. | have a thick lens that can sense changes in brightness |
| m. | a straw-like tongue used to suck nectar or honey |
| n. | barbed and has an attached venom pouch; used for defense |

Anatomy of a Worker Bee



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1. head _____
2. compound eye _____
3. simple eyes _____
4. antennae _____
5. proboscis _____
6. mandibles _____
7. thorax _____
8. wings _____
9. legs _____
10. pollen basket _____
11. abdomen _____
12. stinger _____
13. honey sac _____
14. wax glands _____

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- b. the middle region of the bee that contains the flight muscles, 4 wings, and 6 legs
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- d. a collection of hairs where pollen is stored for transport
- e. movable feelers that detect smells and movement
- f. the rear region of the bee that contains organs for digestion, reproduction, and respiration as well as the stinger and wax glands
- g. glands that form and excrete wax
- h. used for walking, dusting antennae, brushing pollen off body hairs, and storing pollen
- i. beat 250 times per second allowing the bee to fly
- j. made up of tiny lenses that allow the bee to see ultraviolet light and visible light with the exception of red
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- l. have a thick lens that can sense changes in brightness
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