



Nature-Watch Activity Kit

Honeycomb Candle

(Nature Watch Kit #133)

Kit Contents

<u>Item:</u>	<u>Kit Size</u>		
	1	25	100
	<u>Quantities:</u>		
4" x 4" Honeycomb	1	25	100
5" Pieces of Wick	1	25	100
Honey Sticks	1	25	100
Baggies	0	25	100
Instructor Manual	1	1	1

This page includes the Next Generation Science Standards (NGSS) mapping for this kit and Science, Technology, Engineering, and Math (STEM) extensions (on back) to use in adapting and extending this activity to other subject areas.

Next Generation Science Standards Alignment

K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

2-LS2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.

3-LS2-1. Construct an argument that some animals form groups that help members survive.

MS-PS1-6. Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.

MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

HS-LS2-8. Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce.

**See Back for
STEM Extensions**

This Nature Watch Activity Kit contains an Instructor Manual and materials to implement the curriculum. The kit was designed to be used with adult supervision only. Unsupervised use is not recommended.



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STEM Extensions

Science

By researching the U.S. Department of Agriculture and the Environmental Protection Agency's websites, study the phenomenon of Colony Collapse Disorder, which is affecting the United States' honeybee population. Discuss what you think are the best solutions for addressing this problem.

Photocopy and color the bees shown in "Which Type of Honey Bee Is This?". Label their body parts and explain how the bodies of the three types of bees are different.

Create a mobile that displays the life cycle of a honeybee. Include the egg, larva, pupa, and adult stages.

Technology

(Younger) Record time-lapse photography of the honeycomb candle burning by taking a photo every 30 seconds. Print the photos and make a flip book to "play back" the photos.

(Older) Record time-lapse photography of the honeycomb candle burning by taking a photo every 30 seconds. Play back the time-lapse photographs in PowerPoint or by simply clicking through them to see a "movie" of your honeycomb candle burning. Experiment with different time intervals for snapping the photographs.

Engineering

Hold a competition to design a longer-burning honeycomb candle. Try placing the candle inside different containers, changing the size or shape of the candle, or changing the environment around the candle. Which design keeps the candle burning the longest?

Brainstorm and design another use for the honeycomb that could help people in everyday life. Draw a diagram showing how the honeycomb would be used in your design.

Math

Make a bee birthday calendar using the information provided in "An Introduction to Honey Bees". If a queen bee lays eggs as displayed in the chart below, when will each bee chew itself out of the honeycomb? When will each bee turn 6 weeks old?

Type of bee	Date when egg is laid
Drone	January 23
Worker	January 30
Worker	February 12
Drone	February 12
Queen	February 12

A honeybee queen can lay up to 2,000 eggs in one day. If she lays *1,000 eggs on Day 1, 1,800 eggs on Day 2, 1,655 eggs on Day 3, 1,200 eggs on Day 4, and 2,000 eggs on Day 5*, how many of the eggs will hatch into worker bees and how many will hatch into drones? Create a stacked bar graph showing how many eggs of each type are hatched each day.

Measure one cell of the honeycomb and use your measurement to estimate the area of the honeycomb. Then check your guess by measuring the whole honeycomb.