Bee-pocalypse: Another Media Scare Story

Video Length: 7:30

Lesson Description:
Are honey bees still dying off? The media seems to think so. But what if they're wrong? Are they doing enough research? Does the media run negative stories for a reason? Explore these ideas as we investigate how the media is presenting the status of the honey bees, the current reality of the honey bee population, and the need to think critically and question the information provided from all sources.

Objectives:
Students will be able to:

- define the term "colony collapse disorder" and explain its significance in the context of honey bee populations.
- summarize the main arguments presented in the video regarding the media's portrayal of the honey bee population crisis.
- compare and contrast the information provided by media sources with scientific data on honey bee populations discussed in the video.
- critique the media's role in shaping public perception about environmental issues.

Concepts & Key Terms:
Colony Collapse Disorder: A phenomenon where the majority of worker bees in a hive disappear, leaving behind the queen, food, and a few nurse bees to care for the remaining immature bees.

Genetically Modified Organisms (GMOs): Organisms whose genetic material has been altered using genetic engineering techniques to achieve desired traits, such as resistance to pests or improved nutritional content.

Neonicotinoids: A class of insecticides chemically similar to nicotine, often used in agriculture, which has been implicated in the decline of bee populations.

Pesticides: Chemical substances used to kill or control pests, including insects, weeds, and disease-causing organisms, to protect crops and ensure agricultural productivity.

Preview Activity:
Use Think, Pair, Share to have students answer and discuss these preview questions: Why are honey bees important to our ecosystem? What do you know about the current status of honey bee populations? How can media coverage influence public perception of environmental issues?
OR
Distribute copies of the K-W-L worksheet to the class. Have students fill in the K and W sections. After showing the video, have students complete the L section and answer the questions at the bottom of the worksheet.

Viewing Guide:
We recommend that teachers show the video twice: first to allow students to view the video and focus on the issues presented, and second to allow them time to

complete the viewing guide. After they complete the viewing guide, allow students a few minutes to work in pairs to share and verify answers.

Answers to Viewing Guide

1. dying
2. years
3. more
4. Exaggeration
5. pesticides
6. chemicals
7. anti-capitalist

Bee-pocalypse: Another Media Scare Story

Viewing Guide

Name _____ Date _____

Class _____Period _____ Teacher_____

Directions: As you watch the video, fill in the blanks with the correct words.

1. Have you heard about that other environmental crisis? Honey bees are _____.
2. For several _____, beekeepers lost lots of bees.
3. Look, _____ people are going to watch the video that says you might starve.
4. Catastrophe. _____. That's what plays. That's what gets the clicks.
5. Today's _____ are safer than ever.
6. Wait, organic farmers use _____?
7. It's really an _____ movement.

Take a few moments to reflect on the video and answer these questions.

What differences did you notice between how media and scientists explain the honey bee population trends? _____

_____

_____

What should be the media's role in our society? Are they accomplishing that role? Explain. _____

_____

_____

What can happen when people distrust the information being provided by mainstream media? _____

_____

_____

Discussion and Analysis

1. What is colony collapse disorder?
2. How did beekeepers respond to colony collapse disorder?
3. What main points does the video make about the media's portrayal of honey bee decline?
4. How has the honey bee population changed since the occurrence of colony collapse disorder?
5. What differences did you notice between how media and scientists explain the honey bee population trends?
6. How can the information from the video be used to evaluate other environmental media reports?
7. Why does the media tend to use dramatic headlines for stories? Why does media seem to focus on "bad news" instead of more positive stories?
8. What do you think is the media's responsibility in providing accurate information to the public? How should they accomplish that responsibility?
9. What happened to food production and prices in Sri Lanka when they were forced to go organic "overnight?" Are the consequences good or bad? Explain.
10. Why is it important to be able to grow more food on less land?
11. What will happen to society if regulations designed to protect the environment, like those mentioned in the video, lead to significantly lower food production?
12. What did Jon Entine mean when he said, "They are hurting the very people, especially the developing world, that they claim to help."?
13. Why are the anti-pesticides, anti-GMO movements called anti-capitalist movements in the video?
14. What are some potential sources of error or limitations in the studies mentioned in the video? How might these impact the conclusions drawn?
15. How can critical thinking skills help you discern between credible and non-credible sources of information on environmental issues?
16. How does the video encourage viewers to apply critical thinking when consuming media reports on scientific topics?
17. Why is it important to question and fact-check the information you consume?

Discuss These Lines from the Video:

The media are so irresponsible.

We're not in any way facing an apocalypse involving bees.

Hysteria generates donations and the oxygen for these organizations is money donated by people who think they're doing good.

Many of these environmental groups harm people in the United States and globally.

The activists blamed pesticides for that "colony collapse disorder" even though other countries using the same pesticides had no colony collapse.

The natural-food people say organic. You just don't have to have the chemicals… buy organic and you don't get 'em. They use chemicals extensively.

This attack on industrial chemicals is really a way for the environmental industry to go after what they call big ag, big corporations.

We're following an outdated 40-year-old environmental script that just doesn't work in this technologically innovative world. They are outdated and they are hurting the very people especially the developing world that they claim to want to help.

Quotes for Discussion:

Control of the media of communication and information means control of the mind.
– Francis E. Walter

If people in the media cannot decide whether they are in the business of reporting news or manufacturing propaganda, it is all the more important that the public understand that difference, and choose their news sources accordingly.
– Thomas Sowell

The media's the most powerful entity on earth. They have the power to make the innocent guilty and to make the guilty innocent, and that's power. Because they control the minds of the masses. – Malcolm X

The media's power is frail. Without the people's support, it can be shut off with the ease of turning a light switch. – Corazon Aquino

The media is supposed to be custodians of the facts and watchdogs of government. They have, for the most part, neglected to be either of those things.
– Janeane Garofalo

I believe democracy requires a 'sacred contract' between journalists and those who put their trust in us to tell them what we can about how the world really works.
– Bill Moyers

Activities:

1. Have students complete the K-W-L chart in class or for homework. (Recall that the K and W sections are to be completed before watching the video and the L section after watching the video.)

2. Have students complete the political cartoon activity in class or for homework.

3. Have students complete the PMI chart in class or for homework.

4. Have students complete and submit the Exit Ticket as they leave class.

5. Have students complete the Claim Evidence Response activity in class or for homework. Consider reviewing the PDF "5 Steps to Verify Information" with students prior to having them complete the activity.

6. Infographic Math Worksheets – **differentiated** levels. Have students review the honey bees infographic. Using the infographic, they can solve the problems on the differentiated worksheets. Level 1 is the easiest, level 2 medium, and level 3 is the most difficult of the three. Assign the sheets according to student ability. Answer sheets with methodology are provided. This activity provides practice in retrieving information from a source and using that information to solve a problem as well as the math skills practice.

7. Practice reading and applying information from a data table by having students complete the Data Table Analysis worksheet. (Answer key provided.) It uses data from https://downloads.usda.library.cornell.edu/usda-esmis/files/rn301137d/4m90gc28p/gq67m7401/hcny0823.pdf

8. Individually, students will define colony collapse disorder in their own words and create an illustration or diagram that explains the phenomenon and its impact on honey bee populations.

9. In small groups, have students research another environmental issue that has been covered by the media. They will prepare a short presentation comparing the media's portrayal to scientific findings, similar to the video. In addition, you may have them fill out Claim Evidence Response sheets as they prepare their presentations.

10. Divide students into two groups: one representing the media and the other representing scientists. Each group will prepare arguments and engage in a debate about the accuracy of honeybee population reporting.

11. In small groups, have students design a public awareness campaign about honey bees that accurately represents scientific data. They can create posters, social media posts, or short videos as part of their campaign.

12. Have students write an essay about the role of the media in a free society and the potential impact/effects on society if people don't trust the information being provided to them by the media.

13. Invite a local beekeeper (there are beekeepers even in cities!) to speak to your class. Have students prepare relevant interview questions in advance.

14. Have students select a news source and gather the headlines from the top 5-10 articles. They will analyze the headlines to determine whether each headline is framed positively, negatively, or neutrally. Students will then tally the results to see the overall tone of the headlines. Finally, they will present their findings in a brief report, discussing any patterns observed and reflecting on how the tone of

headlines might influence reader perception. For the best results, ensure a large diversity of media sources in the class.

Name _____ Date _____

Class _____ Period _____ Teacher _____

Bee-pocalypse: Another Media Scare Story

K-W-L Chart

Directions: Complete the **K** and **W** sections prior to watching the video. After you have seen the video, complete the **L** section and answer the questions below the K-W-L chart.

K	W	L
What I know about how the media portrays environmental stories...	What I want to know about how the media portrays environmental stories...	What I've learned about how the media portrays environmental stories...

What could happen if people distrust the information being provided by mainstream media? _____

_____

_____

_____

Does the media have an incentive to exaggerate information and portray things in the worst (or sometimes best) light? Explain.

_____

_____

_____

Name _____ Date _____

Class _____ Period _____ Teacher _____

Bee-pocalypse: Another Media Scare Story

PMI Chart

P = Plus: What might be some positives of how the media covered the honey bee crisis?
M = Minus: What might be some negatives of how the media covered the honey bee crisis?
I = Interesting: What is interesting about how the media covered the honey bee crisis?

+ Positives +	- Negatives -	I

How might public opinion or behavior change if people only hear one side of the honeybee story from the media? _____

_____

_____

_____

Why do you think dramatic or negative headlines are used more often, even when the facts don't support a crisis? _____

_____

_____

WHY?

DETAILS

WHAT ?

5 Steps to Verify Information

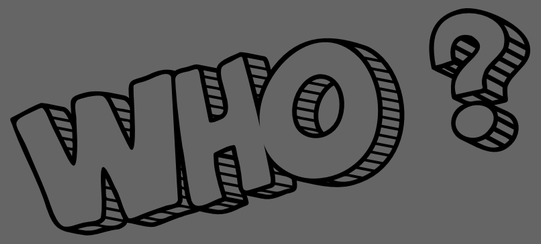
WHO ?

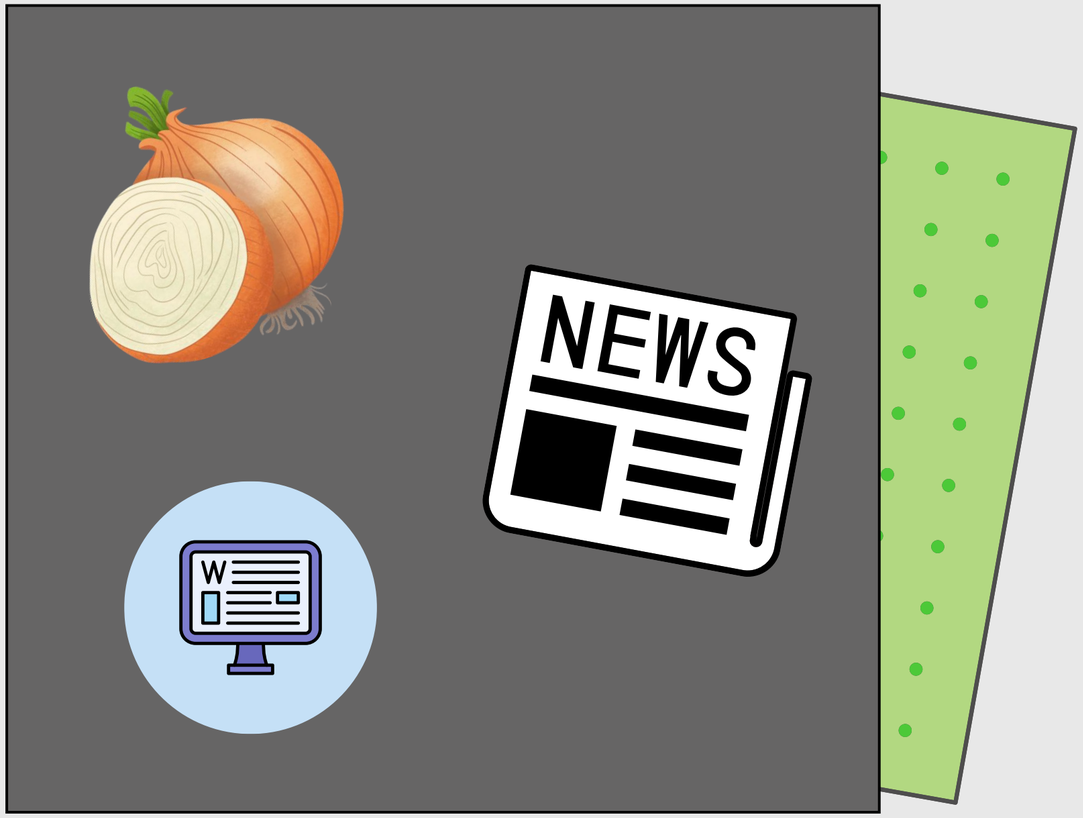
WHEN ?

Stossel IN THE CLASSROOM

1. Evaluate the Source

Check the credibility of the source. Is it a well-known and respected outlet? Look for information about the author and the organization's reputation.





Not all sources are equal in quality!

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WHAT ?

2. Cross-Check Information

Verify the facts by comparing them with multiple reputable sources. See if other reliable sources are reporting the same information.

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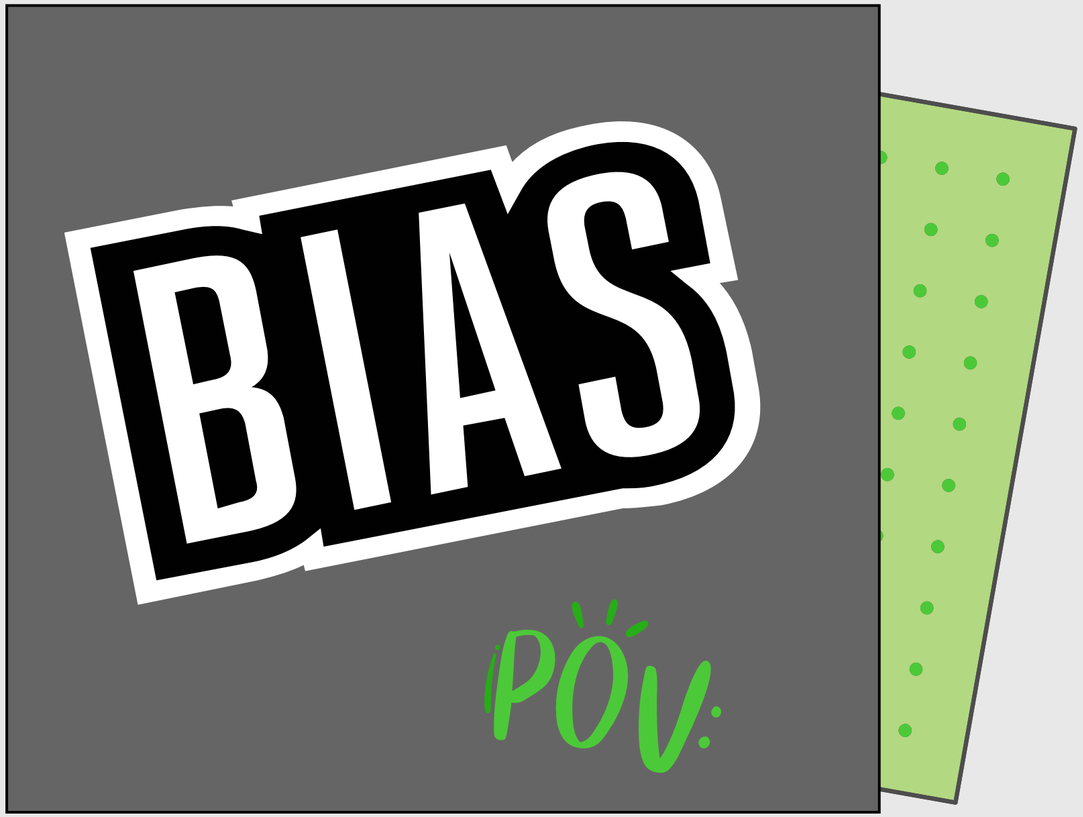
3. Check for Bias

Assess the content for any potential bias. Look for loaded (emotional) language or one-sided arguments. Consider the source's potential motives or interests. Who funds the source?



$ Money often = motivation
Follow the money! $

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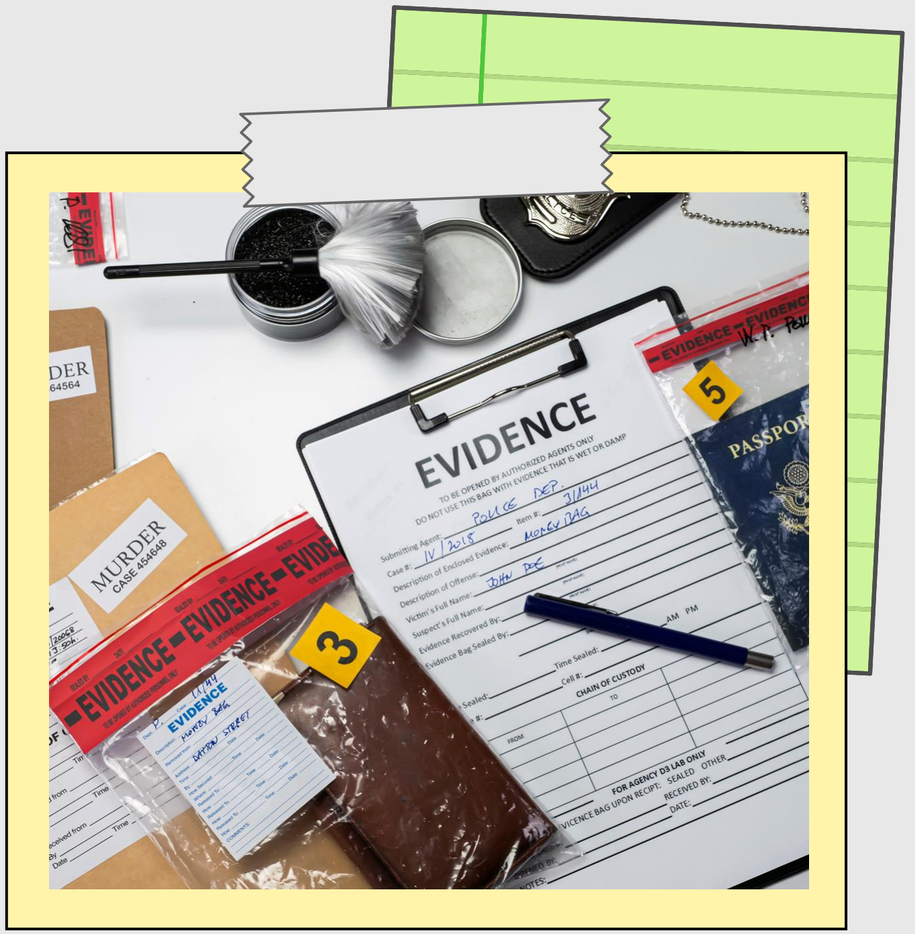
DETAILS

4. Examine the Evidence

Look for supporting evidence, such as data, expert quotes, and references. Reliable information will be backed by verifyable facts and sources.



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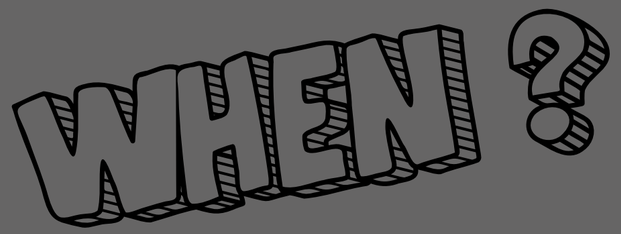
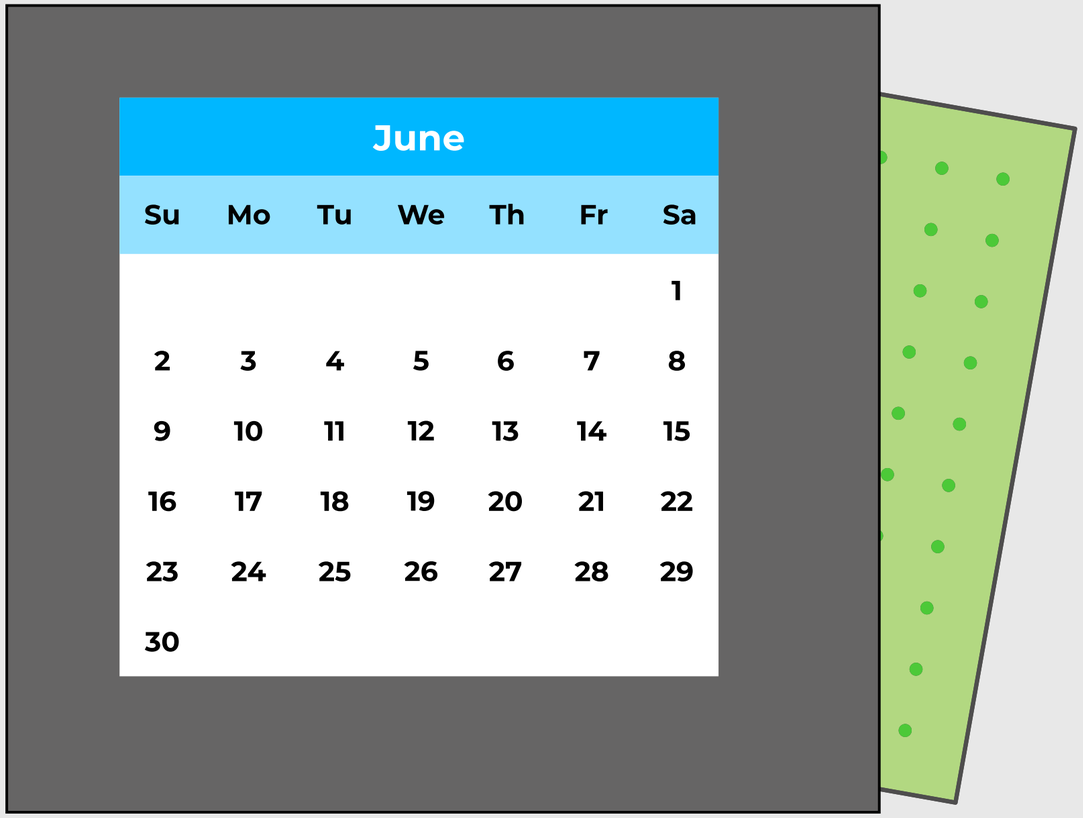
5. Verify Dates and Context

Ensure the information is current and relevant. Check the publication date and consider the context in which the information was presented.





When matters. Information can become outdated - or updated!

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Put into Practice

Now that you know how to verify information, put it into practice! Don't share information unless you've verified it first.

You can also use the Claim - Evidence - Response format to go through your steps of verifying a claim.

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Name _____ Date _____

Class_____ Period _____ Teacher _____

Bee-pocalypse: Another Media Scare Story

Claim Evidence Reasoning Activity

Claim: What is the claim from this video you are evaluating?

Evidence: What evidence is presented (or can you find) in support of the claim?

Reasoning: How does the evidence support (or dispute) the claim?

5 Steps to Verify Information

1. Evaluate the Source

- Check the credibility of the source. Is it a well-known and respected outlet? Look for information about the author and the organization's reputation.

2. Cross-Check Information

- Verify the facts by comparing them with multiple reputable sources. See if other reliable sources are reporting the same information.

3. Check for Bias

- Assess the content for any potential bias. Look for loaded language or one-sided arguments. Consider the source’s potential motives or interests.

4. Examine the Evidence

- Look for supporting evidence, such as data, expert quotes, and references. Reliable information will be backed by verifiable facts and sources.

5. Verify Dates and Context

- Ensure the information is current and relevant. Check the publication date and consider the context in which the information was presented.

Name _____ Date _____

Class _____ Period _____ Teacher _____

Bee-pocalypse: Another Media Scare Story

Data Table Analysis Activity

Directions: Use the information from p.3 of the Honey Bees Colonies Aug. 2023 report on the following page to solve these problems. If needed, use scrap paper to do your calculations. Write your answers below each question. Be sure to label your answers if needed.

1. What is the time frame of this data?

2. How many U.S. states are not directly identified in this data set? Identify two of them by name.

3. Which state had the most colonies as of Jan. 1, 2022?

4. Identify three states that added more colonies than they lost during this time frame.

5. How is the Percent Renovated colonies calculated?

6. For the United States total, how many more colonies were added than lost over this time frame?

7. Which state had the highest percentage of hives renovated?

8. Based on the data provided here, how many honey bee colonies did Indiana have on April 1, 2022 (not included renovated colonies)?

9. Which state lost the greatest number of colonies? If we wrote a headline that said, ”State X Loses More Honey Bee Colonies Than Any Other State,” would that be “unfair” to that state? Why or why not? Which data point would give a fairer comparison of bee colonies lost?

10. If you were giving an award to states for increasing their honey bee population, which state would you give the award to (based on the data in this table) and why are you choosing that state?

Colonies, Maximum, Lost, Percent Lost, Added, Renovated, and Percent Renovated with Five or More Colonies – States and United States: January 1, 2022 and January-March 2022

State	January 1 colonies	January-March					
		Maximum colonies [1]	Lost colonies	Percent lost [2]	Added colonies	Renovated colonies [3]	Percent renovated [4]
	(number)	(number)	(number)	(percent)	(number)	(number)	(percent)
Alabama	7,500	11,500	1,100	10	1,600	520	5
Arizona	25,000	32,000	2,300	7	720	10	(Z)
Arkansas	18,500	21,000	2,600	12	780	20	(Z)
California	1,060,000	1,520,000	162,000	11	139,000	95,000	6
Colorado	3,800	8,500	540	6	-	10	(Z)
Connecticut	3,500	4,500	420	9	10	170	4
Florida	295,000	295,000	24,000	8	50,000	13,500	5
Georgia	118,000	119,000	14,000	12	26,000	18,000	15
Idaho	194,000	215,000	8,000	4	7,500	1,000	(Z)
Illinois	11,500	11,500	2,200	19	900	140	1
Indiana	9,500	9,500	2,900	31	1,300	30	(Z)
Iowa	26,000	29,000	2,800	10	610	30	(Z)
Kansas	4,000	5,000	520	10	240	60	1
Kentucky	8,500	9,500	1,300	14	50	160	2
Louisiana	35,000	37,000	6,000	16	11,000	2,200	6
Maine	3,100	8,000	340	4	-	120	2
Maryland	6,500	8,500	1,900	22	1,100	1,000	12
Massachusetts	6,000	6,000	950	16	350	510	9
Michigan	66,000	71,000	4,500	6	1,400	2,500	4
Minnesota	78,000	97,000	1,500	2	4,800	80	(Z)
Mississippi	20,000	37,000	3,400	9	12,000	2,300	6
Missouri	4,800	11,000	730	7	310	570	5
Montana	45,000	54,000	300	1	30	-	-
Nebraska	24,000	30,000	840	3	30	-	-
New Jersey	11,500	15,000	550	4	1,500	30	(Z)
New Mexico	5,500	8,000	1,900	24	1,000	-	-
New York	44,000	44,000	5,500	13	370	730	2
North Carolina	20,000	24,000	2,300	10	3,100	520	2
North Dakota	75,000	89,000	120	(Z)	300	-	-
Ohio	16,000	16,000	2,400	15	1,600	530	3
Oklahoma	20,000	20,000	3,000	15	50	3,500	18
Oregon	85,000	96,000	5,000	5	2,400	310	(Z)
Pennsylvania	20,000	23,000	2,800	12	2,500	360	2
South Carolina	17,000	20,000	2,500	13	4,500	830	4
South Dakota	21,000	28,000	1,000	4	40	-	-
Tennessee	10,500	10,500	2,300	22	1,300	200	2
Texas	270,000	400,000	37,000	9	80,000	34,000	9
Utah	28,000	32,000	4,100	13	4,600	740	2
Vermont	7,000	7,500	380	5	250	-	-
Virginia	7,500	9,500	1,700	18	1,100	200	2
Washington	70,000	102,000	7,500	7	1,400	6,000	6
West Virginia	4,600	5,000	1,000	20	1,000	200	4
Wisconsin	39,000	53,000	2,800	5	1,400	240	(Z)
Wyoming	6,000	8,000	180	2	20	-	-
Other States [5]	24,870	30,870	2,310	7	620	1,060	3
United States	2,875,670	(X)	331,480	12	368,780	187,380	7

- Represents zero.
(X) Not applicable.
(Z) Less than half of the unit shown.
[1] January 1 colonies plus all colonies moved into that state during the quarter.
[2] Percent lost is the number of lost colonies divided by maximum colonies except for the United States, where percent lost is the number of lost colonies divided by the January 1 colonies.
[3] Defined as any surviving colony that was requeened or received new honey bees through nuc or package.
[4] Percent renovated is the number of renovated colonies divided by maximum colonies except for the United States, where percent renovated is the number of renovated colonies divided by the January 1 colonies.
[5] Includes data for States not published in this table.

https://downloads.usda.library.cornell.edu/usda-esmis/files/rn301137d/4m90gc28p/gq67m7401/hcny0823.pdf

Name _____ Date _____

Class _____ Teacher _____

Bee-pocalypse: Another Media Scare Story

Data Table Analysis Activity ANSWER KEY

Directions: Use the information from p.3 of the Honey Bees Colonies Aug. 2023 report on the following page to solve these problems. If needed, use scrap paper to do your calculations. Write your answers below each question. Be sure to label your answers if needed.

1. What is the time frame of this data?

   Jan. 1,2022 – March 31, 2022

2. How many U.S. states are not directly identified in this data set? Identify two of them by name.

   6 states are not listed by name. Students list any 2 of: Alaska, Delaware, Hawaii, Nevada, New Hampshire, Rhode Island

3. Which state had the most colonies as of Jan. 1, 2022?

   California

4. Identify three states that added more colonies than they lost during this time frame.

   Students can list any 3 of: Alabama, Florida, Louisiana, Minnesota, Mississippi, New Jersey, North Carlolina, North Dakota, south Carolina, Texas

5. How is the Percent Renovated colonies calculated?

   # of renovated colonies ÷ maximum # of colonies

6. For the United States total, how many more colonies were added than lost over this time frame?

   368,780 – 331,480 = 37,300 more colonies added

7. Which state had the highest percentage of hives renovated? What was that percentage?

   Oklahoma had the highest % of renovated colonies with 18% renovated.

8. Based on the data provided here, how many honey bee colonies did Indiana have on April 1, 2022 (not included renovated colonies)?

   9500-2900+1300=7,900 colonies

9. Which state lost the greatest number of colonies? If we wrote a headline that said, "State X Loses More Honey Bee Colonies Than Any Other State," would that be "unfair" to that state? Why or why not? Which data point would give a fairer comparison of bee colonies lost?

California lost the greatest number of colonies. It's unfair to compare California based on the number lost because they had the largest number of hives to start with. It would be more "fair" to compare states using the Percent Lost data point, which shows that a number of states lost a greater percentage of colonies than CA did. But point out that this is exactly what is done with data and numbers all the time! If you want to make California "look bad" you use the number of colonies lost to paint it in a bad light.

10. If you were giving an award to states for increasing their honey bee population, which state would you give the award to (based on the data in this table) and why are you choosing that state?

Answers will vary, depending on the student's logic. Examples: I would give it to Florida because they added more than 2x the number of colonies than they lost. I would give it to Oklahoma because they had the highest percentage of renovated colonies.

Colonies, Maximum, Lost, Percent Lost, Added, Renovated, and Percent Renovated with Five or More Colonies – States and United States: January 1, 2022 and January-March 2022

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California	1,060,000	1,520,000	162,000	11	139,000	95,000	6
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Connecticut	3,500	4,500	420	9	10	170	4
Florida	295,000	295,000	24,000	8	50,000	13,500	5
Georgia	118,000	119,000	14,000	12	26,000	18,000	15
Idaho	194,000	215,000	8,000	4	7,500	1,000	(Z)
Illinois	11,500	11,500	2,200	19	900	140	1
Indiana	9,500	9,500	2,900	31	1,300	30	(Z)
Iowa	26,000	29,000	2,800	10	610	30	(Z)
Kansas	4,000	5,000	520	10	240	60	1
Kentucky	8,500	9,500	1,300	14	50	160	2
Louisiana	35,000	37,000	6,000	16	11,000	2,200	6
Maine	3,100	8,000	340	4	-	120	2
Maryland	6,500	8,500	1,900	22	1,100	1,000	12
Massachusetts	6,000	6,000	950	16	350	510	9
Michigan	66,000	71,000	4,500	6	1,400	2,500	4
Minnesota	78,000	97,000	1,500	2	4,800	80	(Z)
Mississippi	20,000	37,000	3,400	9	12,000	2,300	6
Missouri	4,800	11,000	730	7	310	570	5
Montana	45,000	54,000	300	1	30	-	-
Nebraska	24,000	30,000	840	3	30	-	-
New Jersey	11,500	15,000	550	4	1,500	30	(Z)
New Mexico	5,500	8,000	1,900	24	1,000	-	-
New York	44,000	44,000	5,500	13	370	730	2
North Carolina	20,000	24,000	2,300	10	3,100	520	2
North Dakota	75,000	89,000	120	(Z)	300	-	-
Ohio	16,000	16,000	2,400	15	1,600	530	3
Oklahoma	20,000	20,000	3,000	15	50	3,500	18
Oregon	85,000	96,000	5,000	5	2,400	310	(Z)
Pennsylvania	20,000	23,000	2,800	12	2,500	360	2
South Carolina	17,000	20,000	2,500	13	4,500	830	4
South Dakota	21,000	28,000	1,000	4	40	-	-
Tennessee	10,500	10,500	2,300	22	1,300	200	2
Texas	270,000	400,000	37,000	9	80,000	34,000	9
Utah	28,000	32,000	4,100	13	4,600	740	2
Vermont	7,000	7,500	380	5	250	-	-
Virginia	7,500	9,500	1,700	18	1,100	200	2
Washington	70,000	102,000	7,500	7	1,400	6,000	6
West Virginia	4,600	5,000	1,000	20	1,000	200	4
Wisconsin	39,000	53,000	2,800	5	1,400	240	(Z)
Wyoming	6,000	8,000	180	2	20	-	-
Other States [5]	24,870	30,870	2,310	7	620	1,060	3
United States	2,875,670	(X)	331,480	12	368,780	187,380	7

- Represents zero.
(X) Not applicable.
(Z) Less than half of the unit shown.
[1] January 1 colonies plus all colonies moved into that state during the quarter.
[2] Percent lost is the number of lost colonies divided by maximum colonies except for the United States, where percent lost is the number of lost colonies divided by the January 1 colonies.
[3] Defined as any surviving colony that was requeened or received new honey bees through nuc or package.
[4] Percent renovated is the number of renovated colonies divided by maximum colonies except for the United States, where percent renovated is the number of renovated colonies divided by the January 1 colonies.
[5] Includes data for States not published in this table.

https://downloads.usda.library.cornell.edu/usda-esmis/files/rn301137d/4m90gc28p/gq67m7401/hcny0823.pdf

HONEY BEES

Honey bees pollinate approximately 70 of the 100 crop species that feed 90% of the world.

A single honey bee can visit up to 5,000 flowers in one day.

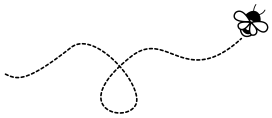
The average worker bee produces about 1/12 of a teaspoon of honey in its lifetime.

Honey bees are the only insects that produce food eaten by humans.

A strong hive may contain up to 60,000 honey bees.

A queen bee lays up to 2,000 eggs a day and may lay up to a million eggs in her lifetime.

Honey bees visit 2 million flowers to make one pound of honey.



Honey bees fly between 12–15 miles per hour.

Honey bees flap their wings 12,000 times per minute.

One honey bee colony has a foraging range of 18,000 acres.

It is a myth (from an old misunderstanding or miscalculation) that bees, based on their design and aerodynamics, shouldn't be able to fly.

Due to their vision, honey bees only fly during the day. They have a curfew of sunset!

Name _____ Date _____

Class _____ Period _____ Teacher _____

Bee-pocalypse: Another Media Scare Story

Infographic Problem-Solving Activity – Level 1

Directions: Use the information from the ***Honey Bees Infographic*** to solve these problems. Use scrap paper to do your calculations and write your answers below each question. Be sure to label your answers. (i.e. flowers, bees, etc.)

1. How many flowers can 10 honey bees visit in one day?

2. How much honey do 12 worker bees produce together in their lifetimes?

3. How many bees are there in 3 strong hives?

4. How many eggs does a queen honey bee lay in a week?

5. How many flowers do honey bees visit to make 5 pounds of honey?

6. What is the range of miles honey bees can fly in 2 hours?

7. How many times do honey bees flap their wings in 5 minutes?

8. If you have 2 honey bee colonies, what is the total foraging range?

9. How many flowers do honey bees visit to produce 1/4 pound of honey?

10. Approximately how many days does a queen honey bee lay eggs in her lifetime?

HONEY BEES

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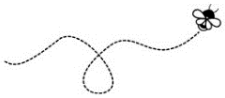

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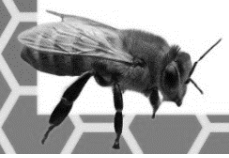

Name _____ Date _____

Class _____ Period _____ Teacher _____

Bee-pocalypse: Another Media Scare Story

Infographic Problem-Solving Activity – Level 1 – ANSWER KEY

Directions: Use the information from the ***Honey Bees Infographic*** to solve these problems. Use scrap paper to do your calculations and write your answers below each question. Be sure to label your answers. (i.e. flowers, bees, etc.)

1. **Question**: How many flowers can 10 honey bees visit in one day?
   Solution: Multiply the number of flowers one bee visits by the number of bees.
   Calculation: 5,000 flowers/bee × 10 bees = 50,000 flowers
   Answer: 50,000 flowers

2. **Question**: How much honey do 12 worker bees produce together in their lifetimes?
   Solution: Multiply the amount of honey one bee produces by the number of bees.
   Calculation: 1/12 teaspoon/bee × 12 bees = 1 teaspoon
   Answer: 1 teaspoon

3. **Question**: How many bees are there in 3 strong hives?
   Solution: Multiply the number of bees in one hive by the number of hives.
   Calculation: 60,000 bees/hive × 3 hives = 180,000 bees
   Answer: 180,000 bees

4. **Question**: How many eggs does a queen honey bee lay in a week?
   Solution: Multiply the number of eggs per day by the number of days in a week.
   Calculation: 2,000 eggs/day × 7 days = 14,000 eggs
   Answer: 14,000 eggs

5. **Question**: How many flowers do honey bees visit to make 5 pounds of honey?
   Solution: Multiply the number of flowers needed for one pound by the number of pounds.
   Calculation: 2,000,000 flowers/pound × 5 pounds = 10,000,000 flowers
   Answer: 10,000,000 flowers

6. **Question**: What is the range of miles honey bees can fly in 2 hours?
   Solution: Multiply the speed range by the number of hours.
   Calculation: 12 miles/hour × 2 hours = 24 miles (minimum) 15 miles/hour × 2 hours = 30 miles (maximum)
   Answer: 24-30 miles

7. **Question**: How many times do honey bees flap their wings in 5 minutes?
   Solution: Multiply the number of flaps per minute by the number of minutes.
   Calculation: 12,000 flaps/minute × 5 minutes = 60,000 flaps
   Answer: 60,000 flaps

8. **Question**: If you have 2 honey bee colonies, what is the total foraging range?
   Solution: Multiply the foraging range of one colony by the number of colonies.
   Calculation: 18,000 acres/colony × 2 colonies = 36,000 acres
   Answer: 36,000 acres

9. **Question**: How many flowers do honey bees visit to produce 1/4 pound of honey?
   Solution: Divide the number of flowers needed for one pound by 4.
   Calculation: 2,000,000 flowers/pound ÷ 4 = 500,000 flowers
   Answer: 500,000 flowers

10. **Question**: Approximately how many days does a queen honey bee lay eggs in her lifetime?
    Solution: Divide the total number of eggs by the number of eggs laid per day.
    Calculation: 1,000,000 eggs ÷ 2,000 eggs/day = 500 days
    Answer: 500 days

Name _____ Date _____

Class _____ Period _____ Teacher _____

Bee-pocalypse: Another Media Scare Story

Infographic Problem-Solving Activity – Level 2

Directions: Use the information from the ***Honey Bees Infographic*** to solve these problems. Use scrap paper to do your calculations and write your answers below each question. Be sure to label your answers. (i.e. flowers, bees, etc.)

1. How many flowers can a hive with 60,000 honey bees visit in one day?

2. How many eggs will a queen honey bee lay in a month (assuming 30 days)?

3. If a honey bee hive produces 50 pounds of honey in a season, how many flowers have they visited?

4. How many worker honey bees are needed to produce one full teaspoon of honey?

5. Calculate the minimum and maximum distance a honey bee can fly in 5 hours.

6. How many times do honey bees flap their wings in an hour?

7. Given that 1 square mile is 640 acres, how many square miles is one honeybee colony's foraging range?

8. A strong hive may contain up to 60,000 honey bees. If 10% of the bees die due to unknown factors, how many bees remain in the hive?

9. If 90% of the eggs a queen lays each day survive to become worker bees, how many worker bees are added to the hive in a week?

10. How many pounds of honey can honey bees make after visiting 10 million flowers?

HONEY BEES

Honey bees pollinate approximately 70 of the 100 crop species that feed 90% of the world.

A single honey bee can visit up to 5,000 flowers in one day.

The average worker bee produces about 1/12 of a teaspoon of honey in its lifetime.

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Honey bees visit 2 million flowers to make one pound of honey.

Honey bees fly between 12-15 miles per hour.

Honey bees flap their wings 12,000 times per minute.

One honey bee colony has a foraging range of 18,000 acres.

It is a myth (from an old misunderstanding/miscalculation) that bees, based on their design and aerodynamics, shouldn't be able to fly.

Due to their vision, honey bees only fly during the day. (They have a curfew of sunset!)

Name _____ Date _____

Class _____ Period _____ Teacher _____

Bee-pocalypse: Another Media Scare Story

Infographic Problem-Solving Activity – Level 2 – Answer Key

Directions: Use the information from the ***Honey Bees Infographic*** to solve these problems. Use scrap paper to do your calculations and write your answers below each question. Be sure to label your answers. (i.e. flowers, bees, etc.)

1. **Question**: How many flowers can a hive with 60,000 honey bees visit in one day?
   Solution: Multiply the number of flowers one bee visits by the number of bees in the hive.
   Calculation: 5,000 flowers/bee × 60,000 bees = 300,000,000 flowers
   Answer: 300,000,000 flowers

2. **Question**: How many eggs will a queen honey bee lay in a month (assuming 30 days)?
   Solution: Multiply the number of eggs laid per day by the number of days in a month.
   Calculation: 2,000 eggs/day × 30 days = 60,000 eggs
   Answer: 60,000 eggs

3. **Question**: If a honey bee hive produces 50 pounds of honey in a season, how many flowers have they visited?
   Solution: Multiply the number of flowers needed for one pound by the number of pounds produced.
   Calculation: 2,000,000 flowers/pound × 50 pounds = 100,000,000 flowers
   Answer: 100,000,000 flowers

4. **Question**: How many worker honey bees are needed to produce one full teaspoon of honey?
   Solution: Divide one teaspoon by the amount of honey one bee produces.
   Calculation: 1 teaspoon ÷ 1/12 teaspoon/bee = 12 bees
   Answer: 12 bees

5. **Question**: Calculate the minimum and maximum distance a honey bee can fly in 5 hours.
   Solution: Multiply the speed range by the number of hours.
   Calculation: 12 miles/hour × 5 hours = 60 miles (minimum) 15 miles/hour × 5 hours = 75 miles (maximum)
   Answer: 60-75 miles

6. **Question**: How many times do honey bees flap their wings in an hour?
   Solution: Multiply the number of flaps per minute by the number of minutes in an hour.
   Calculation: 12,000 flaps/minute × 60 minutes = 720,000 flaps
   Answer: 720,000 flaps

7. **Question**: Goven that 1 square mile is 640 acres, how many square miles is one honey bee colony's foraging range?
   Solution: Divide the total number of acres by the number of acres in a square mile.
   Calculation: 18,000 acres ÷ 640 acres/square mile = 28.125 square miles
   Answer: 28.125 square miles

8. **Question**: A strong hive may contain up to 60,000 honey bees. If 10% of the bees die due to unknown factors, how many bees remain in the hive?
   Solution: Calculate 10% of the total number of bees and subtract it from the total.
   Calculation: 10% of 60,000 bees = 0.10 × 60,000 = 6,000 bees 60,000 bees - 6,000 bees = 54,000 bees
   Answer: 54,000 bees

9. **Question**: If 90% of the eggs a queen lays each day survive to become worker bees, how many worker bees are added to the hive in a week?
   Solution: Calculate the number of eggs laid per week and then find 90% of that number.
   Calculation: 2,000 eggs/day × 7 days = 14,000 eggs 90% of 14,000 eggs = 0.90 × 14,000 = 12,600 worker bees
   Answer: 12,600 worker bees

10. **Question**: How many pounds of honey can honey bees make after visiting 10 million flowers?
    Solution: Divide the total number of flowers visited by the number of flowers needed for one pound.
    Calculation: 10,000,000 flowers ÷ 2,000,000 flowers/pound = 5 pounds
    Answer: 5 pounds

Name _____ Date _____

Class _____ Period _____ Teacher _____

Bee-pocalypse: Another Media Scare Story

Infographic Problem-Solving Activity – Level 3

Directions: Use the information from the ***Honey Bees Infographic*** to solve these problems. Use scrap paper to do your calculations and write your answers below each question. Be sure to label your answers. (i.e. flowers, bees, etc.)

1. If 80% of the eggs a queen honey bee lays per day hatch into worker bees, how many worker bees are added to the hive in a year?

2. If the efficiency of honey bee foraging improves by 25%, how many flowers would they need to visit to make a pound of honey?

3. If a hive contains 60,000 bees, calculate the total number of wing flaps in the hive in one minute.

4. If the foraging range of a honey bee colony is reduced by 15%, what is the new foraging range in acres?

5. If the number of honey bees in a hive decreases by 10% each month, how many bees remain after 6 months if the hive started with 50,000 bees?

6. Calculate the maximum distance honey bees can cover in 8 hours, and express this distance in kilometers (1 mile = 1.60934 kilometers).

7. How many flowers are needed to make 1 kilogram of honey? (1 pound = 0.453592 kilograms)

8. If stress reduces a honey bee queen's egg-laying capacity by 40%, how many eggs does she lay daily under these conditions?

9. If a beekeeper needs to rebuild lost colonies by splitting hives, and each split reduces the original hive population by 20%, how many splits can be made from a hive of 60,000 bees before the hive population drops below 10,000 bees?

10. If a honey bee colony's productivity increases by 5% every month due to improved beekeeping practices, calculate the overall percentage increase in productivity after one year.

HONEY BEES

Honey bees pollinate approximately 70 of the 100 crop species that feed 90% of the world.

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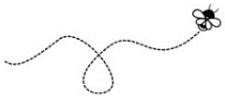

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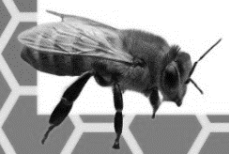

Name _____ Date _____

Class _____ Period _____ Teacher _____

Bee-pocalypse: Another Media Scare Story

Infographic Problem-Solving Activity – Level 3 – Answer Key

Directions: Use the information from the ***Honey Bees Infographic*** to solve these problems. Use scrap paper to do your calculations and write your answers below each question. Be sure to label your answers. (i.e. flowers, bees, etc.)

1. **Question**: If 80% of the eggs a queen honey bee lays per day hatch into worker bees, how many worker bees are added to the hive in a year?
   Solution: Calculate the number of eggs laid in a year and then find 80% of that number.
   Calculation: 2,000 eggs/day × 365 days/year = 730,000 eggs/year 80% of 730,000 eggs = 0.80 × 730,000 = 584,000 worker bees
   Answer: 584,000 worker bees

2. **Question**: If the efficiency of honey bee foraging improves by 25%, how many flowers would they need to visit to make a pound of honey?
   Solution: Calculate the reduction in the number of flowers needed by finding 25% of 2 million and subtract it from the original number.
   Calculation: 25% of 2,000,000 flowers = 0.25 × 2,000,000 = 500,000 flowers 2,000,000 flowers - 500,000 flowers = 1,500,000 flowers
   Answer: 1,500,000 flowers

3. **Question**: If a hive contains 60,000 bees, calculate the total number of wing flaps in the hive in one minute.
   Solution: Multiply the number of bees by the number of flaps per bee.
   Calculation: 60,000 bees × 12,000 flaps/bee = 720,000,000 flaps
   Answer: 720,000,000 flaps

4. **Question**: If the foraging range of a honey bee colony is reduced by 15%, what is the new foraging range in acres?
   Solution: Calculate the reduction in the foraging range and subtract it from the original range.
   Calculation: 15% of 18,000 acres = 0.15 × 18,000 = 2,700 acres 18,000 acres - 2,700 acres = 15,300 acres
   Answer: 15,300 acres

5. **Question**: If the number of honey bees in a hive decreases by 10% each month, how many bees remain after 6 months if the hive started with 50,000 bees?
   Solution: Apply the 10% reduction repeatedly for 6 months.
   Calculation: Month 1: 50,000 bees × 0.90 = 45,000 bees Month 2: 45,000 bees × 0.90 = 40,500 bees Month 3: 40,500 bees × 0.90 = 36,450 bees Month 4: 36,450 bees × 0.90 = 32,805 bees Month 5: 32,805 bees × 0.90 = 29,524.5 bees Month 6: 29,524.5 bees × 0.90 = 26,572.05 bees
   Answer: 26,572 bees (rounded to nearest whole number)

6. **Question**: Calculate the maximum distance honey bees can cover in 8 hours, and express this distance in kilometers (1 mile = 1.60934 kilometers).
Solution: Calculate the distance in miles and then convert it to kilometers.
Calculation: Maximum distance in miles: 15 miles/hour × 8 hours = 120 miles Convert to kilometers: 120 miles × 1.60934 km/mile = 193.1208 km
Answer: 193.12 kilometers (rounded to two decimal places)

7. **Question**: How many flowers are needed to make 1 kilogram of honey? (1 pound = 0.453592 kilograms)
Solution: Convert pounds to kilograms and then calculate the number of flowers needed.
Calculation: 1 kilogram = 1 pound / 0.453592 = 2.20462 pounds Number of flowers for 1 kilogram: 2,000,000 flowers/pound × 2.20462 pounds = 4,409,240 flowers
Answer: 4,409,240 flowers

8. **Question**: If stress reduces a honey bee queen's egg-laying capacity by 40%, how many eggs does she lay daily under these conditions?
Solution: Calculate the reduction and subtract it from the original number of eggs.
Calculation: 40% of 2,000 eggs = 0.40 × 2,000 = 800 eggs 2,000 eggs - 800 eggs = 1,200 eggs
Answer: 1,200 eggs

9. **Question**: If a beekeeper needs to rebuild lost colonies by splitting hives, and each split reduces the original hive population by 20%, how many splits can be made from a hive of 60,000 bees before the hive population drops below 10,000 bees?
Solution: Apply the 20% reduction repeatedly until the population drops below 10,000 bees.
Calculation: Split 1: 60,000 bees × 0.80 = 48,000 bees Split 2: 48,000 bees × 0.80 = 38,400 bees Split 3: 38,400 bees × 0.80 = 30,720 bees Split 4: 30,720 bees × 0.80 = 24,576 bees Split 5: 24,576 bees × 0.80 = 19,660.8 bees Split 6: 19,660.8 bees × 0.80 = 15,728.64 bees Split 7: 15,728.64 bees × 0.80 = 12,582.912 bees Split 8: 12,582.912 bees × 0.80 = 10,066.3296 bees Split 9: 10,066.3296 bees × 0.80 = 8,053.06368 bees (population drops below 10,000)
Answer: 8 splits

10. **Question**: If a honey bee colony's productivity increases by 5% every month due to improved beekeeping practices, calculate the overall percentage increase in productivity after one year.
Solution: Use the compound interest formula to calculate the total increase.
Calculation: Overall increase = (1 + 0.05)^12 - 1 = (1.05)^12 - 1 = 1.795856 - 1 = 0.795856 = 79.5856%
Answer: 79.59% (rounded to two decimal places)

Name _____ Date _____

Class _____ Period ____ Teacher _____

Bee-pocalypse: Another Media Scare Story

Political Cartoon Activity

Directions: Use the political cartoon to answer the questions.

"Ten more minutes of media manipulation, then it's off to bed."

Briefly describe what is happening in the cartoon. _____

_____

_____

_____

What message is the cartoon trying to convey about media consumption, and how does it relate to the portrayal of the honeybee crisis in the video? _____

_____

_____

_____

How might the concept of "media manipulation" influence public perception of environmental issues, as discussed in the video? _____

_____

_____

_____

_____

Name

Admit One

Why does the media focus on negative stories?

Admit One

EXIT TICKET

Name

Admit One

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